

Visit our award-winning site: canadacomputes.com

The Computer PAPER

trade

Canada's Computer Information Source

10 CENTS

FREE

Cradle-free
Recharging



A closeup on
zoom lenses



A cell phone for
shutterbugs



Celebrating TCP 1988-2003

test

Lab: BIG ZOOM DIGITAL CAMERAS



Print pictures while moments are still developing.



Like the hp photosmart 230 photo-printer, introducing the life of the party, is compact, new, printer that's completely dedicated to 4x6 photo quality prints. It's small enough to take anywhere and as easy to use as your digital camera, making it invited to almost any function. \$349.99. www.hp.com



hp digital imaging. When it's this easy, why not?



BC Edition 2003

Reader Services

Advertising Rates

Reprint Rates

Classified

Subscription Rates

The Computer PAPER

1988-2003 15th Anniversary

Commentary

8 From the Editor

8 Letters

95 CyberWalker: The big and small of portable computing

New & Notable

10 What's New

30 Five ways to leave your old computer

70 Coalition gears up to battle Canadian media laws

74 Bell Canada launches free Wi-Fi hot spots

ICP 15th Anniversary

52 Fifteen years ago

14 The first great decade of personal computing

26 Personalities of the early PC era

34 Working on the balcony

38 Fifteen years ahead

46 The Computer Paper hits Hqstetown

50 The sands of time

Hands On

48 Long leaders: ICP Lab looks at world through 55 and higher zoom lenses

56 Take a few tablets and call me in the morning: a survey of pen-based PCs

94 PopAlbum creates virtual photo album

Small Office Technology

54 Web accessibility hits the mainstream

55 W3C standards and Canadian look and feel guidelines

76 Office Suite Training: Master spell checking in Word

89 Quick Tips: PowerPoint presentation tips

Platform News

71 Apple News: Slim Sockey Samsung widescreen LCDs welcome add ons

72 Using Linux: GUI the next generation

Online & Connected

78 Getting a grip on spam

86 Revising your own Web site: CSP selection, Part 2

Careers & Training

92 Book review: Picture book documents computing history

92 Book review: Blogging guide lacks detail



The cover that started it all
ICP, June 1988

Coming up!

March 2003

Cover Story: The New Digital Home
Lab Test: Colour printers

Ad mailing deadline: Wednesday, Jan. 29
Distribution begins: Wednesday, Feb. 12

April 2003

Cover Story: Digital Video
Lab Test: Mobile Connectivity

Ad mailing deadline: Wednesday, Feb. 26
Distribution begins: Wednesday, Mar. 12

May 2003

Cover Story: Wireless
Lab Test: Digital Audio

Ad mailing deadline: Thursday, Mar. 26
Distribution begins: Wednesday, April 9

Don't Buy a New Desktop

Trade In Your Old One

If it's old, we'll take it!

EUROCOM
www.eurocom.com

For details, please call
1-877-EUROCOM
1-877-387-4346 x 303



Get **20% off** on EUROCOM notebooks and LCD PC systems.

Next Generation Performance



Learn it in **Verisimiles**, the leader in **Display Technology™** to give you **apex-grade performance and features, without breaking the bank.**

Compare ViewSonic's new line-up of LCD monitors with any other LCDs in their class. You can't help but see the difference. From style to performance to price, these stunning Verisimiles LCDs have raised the bar on value.

An LCD for Every Need

Verisimiles' 1 mega-pixel LCD family comes with playing feature sets to satisfy your unique needs. Choose the features that are right for you, including:

- **Super High Contrast** view and display brightness levels for color-rich images that are nothing less than inspiring.
- **32-bit** response for applications like DVD and streaming video.

- **SuperClear™ Technology** delivering high contrast and brilliant colors for superior image clarity.
- **Accusync™** auto-tune ensuring the best possible image by automatically optimizing the monitor settings.
- **PictorialScope™** panel, ideal for screenshots, desktop publishing and long internet pages.
- **WideView™** for picture perfect and comfortable viewing angles up to 170° for multi-person environments.
- **UltraFast™** LCD technology optimizes TV video, gaming and more applications with lightning speed, most saturated colors.

Explore all your visual display choices, including the world's largest selection of LCD monitors and more - from 15" - 23" at www.viewsonic.com

15" LCDs (1024 x 768 native resolution)										17" LCDs (1280 x 1024 native resolution)									
Model	Panel	Response	Contrast	Viewing Angle	Panel	Response	Contrast	Viewing Angle	Panel	Model	Panel	Response	Contrast	Viewing Angle	Panel	Response	Contrast	Viewing Angle	Panel
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700

15" LCDs (1024 x 768 native resolution)										17" LCDs (1280 x 1024 native resolution)									
Model	Panel	Response	Contrast	Viewing Angle	Panel	Response	Contrast	Viewing Angle	Panel	Model	Panel	Response	Contrast	Viewing Angle	Panel	Response	Contrast	Viewing Angle	Panel
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700
V6400	15.5"	16ms	800:1	170°	V6400	16ms	800:1	170°	V6400	V6700	15.5"	16ms	800:1	170°	V6700	16ms	800:1	170°	V6700

Brighter. Bolder. Better.



ViewSonic®
See the difference.™

*Response measured in ms.

Specifications subject to change without notice. Copyright 2002 ViewSonic Corporation. All rights reserved. 01-000-001-000001

The 6-Dual Miracle

8INXP AGP8X/Dual Channel DDR
Pentium® 4 Motherboard

Intel® E7205 Chipset

● Dual Power System (DPS)

The innovative technology that provides 8 phase noise circuitry for every available platform.

Dual Cooling
(Dual Active Fans)

100

DualBIOS™

disADRYTE, patented technology,
protects DNA from degradation
and enables long-term storage.

Dual Logical Processors support (Intel® Hyper Threading Technology)
 Doubles system's computing power

Copyright © 2004 by John Wiley & Sons, Inc.

Dual Channel DDR

Constrains and enhances Northridge's future performance

Dual RAID

(SATA RAID + ATA133 IDE RAID)

Performance data produced with performance data



P4 Titam series
GA-HUNXP 1000-1500 (mm)

- [illegible]




P-4 Titan series 
G.A-850800 Ultra2 

- **Linear** = $y = mx + c$ (m = gradient, c = y-intercept)
- **Quadratic** = $y = ax^2 + bx + c$ (a, b, c = constants)
- **Cubic** = $y = ax^3 + bx^2 + cx + d$ (a, b, c, d = constants)
- **Exponential** = $y = a \cdot b^x$ (a, b = constants)
- **Logarithmic** = $y = \log_b(x)$ (b = constant)
- **Trigonometric** = $y = \sin(x)$, $y = \cos(x)$, $y = \tan(x)$ (x = angle)
- **Hyperbolic** = $y = \sinh(x)$, $y = \cosh(x)$ (x = value)
- **Power** = $y = x^a$ (a = constant)
- **Reciprocal** = $y = \frac{1}{x}$ (x = value)
- **Exponential Growth** = $y = a \cdot b^x$ (a, b = constants)
- **Exponential Decay** = $y = a \cdot b^{-x}$ (a, b = constants)
- **Logarithmic Growth** = $y = \log_b(x)$ (b = constant)
- **Logarithmic Decay** = $y = -\log_b(x)$ (b = constant)
- **Trigonometric Growth** = $y = \sin(x)$, $y = \cos(x)$ (x = angle)
- **Trigonometric Decay** = $y = -\sin(x)$, $y = -\cos(x)$ (x = angle)
- **Hyperbolic Growth** = $y = \sinh(x)$ (x = value)
- **Hyperbolic Decay** = $y = -\sinh(x)$ (x = value)
- **Power Growth** = $y = x^a$ (a = constant)
- **Power Decay** = $y = x^{-a}$ (a = constant)
- **Reciprocal Growth** = $y = \frac{1}{x}$ (x = value)
- **Reciprocal Decay** = $y = -\frac{1}{x}$ (x = value)



- Support for the following features:
 - Video playback with hardware acceleration for better performance
 - Basic transcoding capabilities for streaming performance
 - Integrated transcoding capabilities for Red 5.0 Encoder and High-Def video server
 - Support for H.264, H.263, and H.265 video
 - Integrated transcoding capabilities for Red 5.0 Encoder and High-Def video
 - Support for H.264, H.263, and H.265 video
 - Support for H.264, H.263, and H.265 video
 - Support for H.264, H.263, and H.265 video



	PCE Technology	PCE International
	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231
	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231
	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231	10000 E. 10th Ave. • Suite 100 • Denver, CO 80231

Supercenter
Kmart Supercenter

Exposition 1000
 Tel. 020 4771 111 Fax: 020 4771 111
Exposition 10000
 Tel. 020 4771 111 Fax: 020 4771 111
Exposition 100000
 Tel. 020 4771 111 Fax: 020 4771 111

GeBIT
Geometrische Basis
Geometrische Basis
Geometrische Basis

GIGABYTE
TECHNOLOGY

Upgrade Your Life™ www.gigabyte.com.tw

Prisoners reflect:

When discussing the history of the pocket computer, I do wish your feature writers would not keep giving the impression that



robust OS, well before Palm OS and Windows CE. Until very recently, PDA packet computers were available [that] were technically competitive with, or ahead of, Palm OS and Windows CE in most respects.

I have a Prime Sinc with approximately three- to four-year-old technology, but there is still nothing on the market of comparable size, weight, and price [that] can equal its performance in all areas. [that] would tempt me to trade up.

Further, the SynchroSPEX technology is still being successfully developed by Nokia, whose Nokia 9210i etc. are even bit as good as the best of Palm OS and Windows CE, and in some areas arguably better. Price and Nokia products are readily available to Canadians through the Infomart, and deserve more media/telemarketing, via email.

TCP review: We've been covering this platform since around the Power 5, but since the hardware and operating systems divisions went their separate ways, there hasn't been too much to report since the Power 5 hardware—which we did review.

But you are correct, the Symbian operating system is alive and well in cellular phones.

Fluorene or USB 2?

I have a number of questions regarding the October Test Lab report on USB 2.0 and FireWire add-on.

cards. At what maximum speed will a USB 2.0 and FireWire function if I install the card on an old machine, for instance a 400 MHz Pentium III?

If I install (for example) the Adapted DuoConnect, with its three FireWire and four USB 2.0 ports, how many of the ports can I use at the same time?

Wageningen, The Netherlands

TCP again? The theoretical throughput of USB 2.0 is 480 megabits per second (Mbps) and NetWare is capable of 400 Mbps. As long as you're plugging them into the same type of card slot, they should have the potential of delivering the same throughput. However, it should be noted that there's possibly only a tiny bit of the rest of your system is up to the task. (In other words, if your computer isn't going slowly because of the combination of hardware you use, or because there's too much software running in the background, don't count on getting that throughput.)

With the BackConnect, all of the ports — both internal and external — should be available for use. (These other cards with both internal and external ports may knock one of your external ports offline if you hook up to an internal port.) Again, as in seven ports here will be sharing the same PCI slot you may not get full performance out of every single port, especially if the rest of your system is already running more slowly, as above. Now would have a measure of 480 Mbps to share.

amongst the USB devices, and 600 Mbps to slip amongst the attached FireWire hard-disks.

Jarvis, what Jarvis?

I enjoy reading *The Computer Paper* as I have been involved with computers since before many of your readers were born. Punch cards and creating zip cards to avoid large scale rekeying were second nature to me.

But I find that reading today's computer magazines is like when I used to drink when I am in Montreal. I know what I got out of the article but not the nitry gritty language of computers has expanded as rapidly as the technology it not more widely. These words I am confident you won't find in your *fast and furious* Magazines. Some of the terms are, of course, proprietary names, but after they have been on the market for a week or so they become a lingua franca. I am willing to bet that I am not alone. Admittedly some of the following expressions I'm familiar with, but a book or a [Web] site would really be nice to be able to look them up when I am in doubt. It may be presumptuous but maybe you too might like to check out some of them.

Here are a few terms, expressions and trademarks that are assumed to be the cat, dog, bird, and rat of the industry I found in the current edition of your publication.

Bluetooth,
Audio
DVI,
ADC.

VRAM, DVD-RAM, 500GB HDs (I assume you don't scratch 'em), SRS sound, DVB-equipped, flatline, GeForce, SLYMARC card, SRS sound, CPU, CSS-54-bit AES encryption, DOR2, NAT security, DHCP server capability, built-in IEEE 1394, and the differences between USB 1.1 and USB 2.0 are a moniker, etc., etc., etc.

You'll agree I have not included Gbps, MHz, VGA, BGA, etc, etc, and a number of others I assume I do know, but maybe I only think so.

Obviously, context gives you some idea, but like reading *Le Devoir* de I totally understand what I am reading. You don't publish an English-language equivalent do you? In Montreal I can get *the Gazette*.

Paul Strecher

TIP says: You raise an excellent point, perhaps some monthly or online grocery would be helpful.

No. Overvalued

Hyper-convergence

I read your interesting article "Say hello to Hyper-Threading" (JCP, January 2003). I am about to purchase a computer with an ASUS motherboard model P4PE/L, which is Hyper-Threading compatible. OS will be Windows XP Professional, I can't afford the new 3.06 GHz processor.

Question: If I choose a 2.4/535 \$12 Northwood P4 Intel processor instead of the 3.06 GHz, will I still have some performance improvement due to Hyper-Threading, or is it better then to use a non-Hyper-Threading regular 535 /530 motherboard?

Regards and thanks,
Daniel Schoch

HP implies from our understanding, you shouldn't actually receive any benefit from a hypothesizing-aided motherboard when you're using a non-hypothesizing processor, apart from any advantage added by other lesser components unrelated to the hypothesizing.

Another main advantage will be the ability to upgrade to the Hyperthreading-enabled processor down the road, when it comes in price.

Hope this
Asterisk

Ask for
**Microsoft®
Office XP**
on your new PC.

It costs less.*

For details, contact your preferred computer dealer. Or visit: www.microsoft.com/NewsPC

Received 10 January 2012; revised 27 May 2012; accepted 27 May 2012
 Copyright © 2012 John Wiley & Sons, Ltd.

Office

WHAT'S NEW

By TCP Staff

How many times have you been at a boring party and thought, "What if this thingy made a little high-definition 3D character grooving on the desktop, in tune to the music playing on the PC's virtual jukebox?" Well, someone at Microsoft was thinking.

Plus, there's just one element of the company's newly released **Pixel Digital Media Edition** package (www.microsoft.com/pd), which is billed as "the ultimate photo, music and movie enhancement

pack for Windows XP.

Other features of the package include Photo Story, which allows users to build stories out of photos, adding music, narrations, and pan and zoom effects; Party Maker, which turns the PC into a jukebox complete with video effects, song and artist displays; and an interactive quest-bait. And, a recorder, which records music from cassettes or vinyl records to digital files, with automatic bias and pop reduction and automatic track splitting.

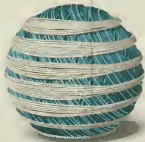
Spotlight



Nokia 6220

Nokia unveils MMS phones
Just when you thought you'd learned to orientated SMS-speak, Nokia has introduced new handsets designed to take advantage of MMS (Multimedia Messaging Service) functionality which allows and phone users to text text with images, video and audio clips. It is the evolution of SMS (Short Message Service), which only allows for text and required users to learn cryptic abbreviated spelling techniques.

Nokia boasts that this 6220 is the world's first EMET (Enhanced Data path for GSM technology) handset, which means data speeds of up to 100bps. Offering 3G high-speed and faster images. It also has full-band functionality (GPRS/GPRS/EDGE/3G/3.1/3.6/3.9/4.2/4.8/5.6/6.3/7.1/7.6/8.0/9.6/10.4/11.2/12.8/14.4/16.0/18.0/20.0/22.4/24.8/27.2/30.0/32.0/34.4/36.8/39.2/41.6/44.0/46.4/48.8/51.2/53.6/56.0/58.4/60.8/63.2/65.6/68.0/70.4/72.8/75.2/77.6/80.0/82.4/84.8/87.2/89.6/92.0/94.4/96.8/99.2/101.6/104.0/106.4/108.8/111.2/113.6/116.0/118.4/120.8/123.2/125.6/128.0/130.4/132.8/135.2/137.6/140.0/142.4/144.8/147.2/149.6/152.0/154.4/156.8/159.2/161.6/164.0/166.4/168.8/171.2/173.6/176.0/178.4/180.8/183.2/185.6/188.0/190.4/192.8/195.2/197.6/200.0/202.4/204.8/207.2/209.6/212.0/214.4/216.8/219.2/221.6/224.0/226.4/228.8/231.2/233.6/236.0/238.4/240.8/243.2/245.6/248.0/250.4/252.8/255.2/257.6/260.0/262.4/264.8/267.2/269.6/272.0/274.4/276.8/279.2/281.6/284.0/286.4/288.8/291.2/293.6/296.0/298.4/300.8/303.2/305.6/308.0/310.4/312.8/315.2/317.6/320.0/322.4/324.8/327.2/329.6/332.0/334.4/336.8/339.2/341.6/344.0/346.4/348.8/351.2/353.6/356.0/358.4/360.8/363.2/365.6/368.0/370.4/372.8/375.2/377.6/380.0/382.4/384.8/387.2/389.6/392.0/394.4/396.8/399.2/401.6/404.0/406.4/408.8/411.2/413.6/416.0/418.4/420.8/423.2/425.6/428.0/430.4/432.8/435.2/437.6/440.0/442.4/444.8/447.2/449.6/452.0/454.4/456.8/459.2/461.6/464.0/466.4/468.8/471.2/473.6/476.0/478.4/480.8/483.2/485.6/488.0/490.4/492.8/495.2/497.6/500.0/502.4/504.8/507.2/509.6/512.0/514.4/516.8/519.2/521.6/524.0/526.4/528.8/531.2/533.6/536.0/538.4/540.8/543.2/545.6/548.0/550.4/552.8/555.2/557.6/560.0/562.4/564.8/567.2/569.6/572.0/574.4/576.8/579.2/581.6/584.0/586.4/588.8/591.2/593.6/596.0/598.4/600.8/603.2/605.6/608.0/610.4/612.8/615.2/617.6/620.0/622.4/624.8/627.2/629.6/632.0/634.4/636.8/639.2/641.6/644.0/646.4/648.8/651.2/653.6/656.0/658.4/660.8/663.2/665.6/668.0/670.4/672.8/675.2/677.6/680.0/682.4/684.8/687.2/689.6/692.0/694.4/696.8/699.2/701.6/704.0/706.4/708.8/711.2/713.6/716.0/718.4/720.8/723.2/725.6/728.0/730.4/732.8/735.2/737.6/740.0/742.4/744.8/747.2/749.6/752.0/754.4/756.8/759.2/761.6/764.0/766.4/768.8/771.2/773.6/776.0/778.4/780.8/783.2/785.6/788.0/790.4/792.8/795.2/797.6/800.0/802.4/804.8/807.2/809.6/812.0/814.4/816.8/819.2/821.6/824.0/826.4/828.8/831.2/833.6/836.0/838.4/840.8/843.2/845.6/848.0/850.4/852.8/855.2/857.6/860.0/862.4/864.8/867.2/869.6/872.0/874.4/876.8/879.2/881.6/884.0/886.4/888.8/891.2/893.6/896.0/898.4/900.8/903.2/905.6/908.0/910.4/912.8/915.2/917.6/920.0/922.4/924.8/927.2/929.6/932.0/934.4/936.8/939.2/941.6/944.0/946.4/948.8/951.2/953.6/956.0/958.4/960.8/963.2/965.6/968.0/970.4/972.8/975.2/977.6/980.0/982.4/984.8/987.2/989.6/992.0/994.4/996.8/999.2/1001.6/1004.0/1006.4/1008.8/1011.2/1013.6/1016.0/1018.4/1020.8/1023.2/1025.6/1028.0/1030.4/1032.8/1035.2/1037.6/1040.0/1042.4/1044.8/1047.2/1049.6/1052.0/1054.4/1056.8/1059.2/1061.6/1064.0/1066.4/1068.8/1071.2/1073.6/1076.0/1078.4/1080.8/1083.2/1085.6/1088.0/1090.4/1092.8/1095.2/1097.6/1100.0/1102.4/1104.8/1107.2/1109.6/1112.0/1114.4/1116.8/1119.2/1121.6/1124.0/1126.4/1128.8/1131.2/1133.6/1136.0/1138.4/1140.8/1143.2/1145.6/1148.0/1150.4/1152.8/1155.2/1157.6/1160.0/1162.4/1164.8/1167.2/1169.6/1172.0/1174.4/1176.8/1179.2/1181.6/1184.0/1186.4/1188.8/1191.2/1193.6/1196.0/1198.4/1200.8/1203.2/1205.6/1208.0/1210.4/1212.8/1215.2/1217.6/1220.0/1222.4/1224.8/1227.2/1229.6/1232.0/1234.4/1236.8/1239.2/1241.6/1244.0/1246.4/1248.8/1251.2/1253.6/1256.0/1258.4/1260.8/1263.2/1265.6/1268.0/1270.4/1272.8/1275.2/1277.6/1280.0/1282.4/1284.8/1287.2/1289.6/1292.0/1294.4/1296.8/1299.2/1301.6/1304.0/1306.4/1308.8/1311.2/1313.6/1316.0/1318.4/1320.8/1323.2/1325.6/1328.0/1330.4/1332.8/1335.2/1337.6/1340.0/1342.4/1344.8/1347.2/1349.6/1352.0/1354.4/1356.8/1359.2/1361.6/1364.0/1366.4/1368.8/1371.2/1373.6/1376.0/1378.4/1380.8/1383.2/1385.6/1388.0/1390.4/1392.8/1395.2/1397.6/1400.0/1402.4/1404.8/1407.2/1409.6/1412.0/1414.4/1416.8/1419.2/1421.6/1424.0/1426.4/1428.8/1431.2/1433.6/1436.0/1438.4/1440.8/1443.2/1445.6/1448.0/1450.4/1452.8/1455.2/1457.6/1460.0/1462.4/1464.8/1467.2/1469.6/1472.0/1474.4/1476.8/1479.2/1481.6/1484.0/1486.4/1488.8/1491.2/1493.6/1496.0/1498.4/1500.8/1503.2/1505.6/1508.0/1510.4/1512.8/1515.2/1517.6/1520.0/1522.4/1524.8/1527.2/1529.6/1532.0/1534.4/1536.8/1539.2/1541.6/1544.0/1546.4/1548.8/1551.2/1553.6/1556.0/1558.4/1560.8/1563.2/1565.6/1568.0/1570.4/1572.8/1575.2/1577.6/1580.0/1582.4/1584.8/1587.2/1589.6/1592.0/1594.4/1596.8/1599.2/1601.6/1604.0/1606.4/1608.8/1611.2/1613.6/1616.0/1618.4/1620.8/1623.2/1625.6/1628.0/1630.4/1632.8/1635.2/1637.6/1640.0/1642.4/1644.8/1647.2/1649.6/1652.0/1654.4/1656.8/1659.2/1661.6/1664.0/1666.4/1668.8/1671.2/1673.6/1676.0/1678.4/1680.8/1683.2/1685.6/1688.0/1690.4/1692.8/1695.2/1697.6/1700.0/1702.4/1704.8/1707.2/1709.6/1712.0/1714.4/1716.8/1719.2/1721.6/1724.0/1726.4/1728.8/1731.2/1733.6/1736.0/1738.4/1740.8/1743.2/1745.6/1748.0/1750.4/1752.8/1755.2/1757.6/1760.0/1762.4/1764.8/1767.2/1769.6/1772.0/1774.4/1776.8/1779.2/1781.6/1784.0/1786.4/1788.8/1791.2/1793.6/1796.0/1798.4/1800.8/1803.2/1805.6/1808.0/1810.4/1812.8/1815.2/1817.6/1820.0/1822.4/1824.8/1827.2/1829.6/1832.0/1834.4/1836.8/1839.2/1841.6/1844.0/1846.4/1848.8/1851.2/1853.6/1856.0/1858.4/1860.8/1863.2/1865.6/1868.0/1870.4/1872.8/1875.2/1877.6/1880.0/1882.4/1884.8/1887.2/1889.6/1892.0/1894.4/1896.8/1899.2/1901.6/1904.0/1906.4/1908.8/1911.2/1913.6/1916.0/1918.4/1920.8/1923.2/1925.6/1928.0/1930.4/1932.8/1935.2/1937.6/1940.0/1942.4/1944.8/1947.2/1949.6/1952.0/1954.4/1956.8/1959.2/1961.6/1964.0/1966.4/1968.8/1971.2/1973.6/1976.0/1978.4/1980.8/1983.2/1985.6/1988.0/1990.4/1992.8/1995.2/1997.6/2000.0/2002.4/2004.8/2007.2/2009.6/2012.0/2014.4/2016.8/2019.2/2021.6/2024.0/2026.4/2028.8/2031.2/2033.6/2036.0/2038.4/2040.8/2043.2/2045.6/2048.0/2050.4/2052.8/2055.2/2057.6/2060.0/2062.4/2064.8/2067.2/2069.6/2072.0/2074.4/2076.8/2079.2/2081.6/2084.0/2086.4/2088.8/2091.2/2093.6/2096.0/2098.4/2100.8/2103.2/2105.6/2108.0/2110.4/2112.8/2115.2/2117.6/2120.0/2122.4/2124.8/2127.2/2129.6/2132.0/2134.4/2136.8/2139.2/2141.6/2144.0/2146.4/2148.8/2151.2/2153.6/2156.0/2158.4/2160.8/2163.2/2165.6/2168.0/2170.4/2172.8/2175.2/2177.6/2180.0/2182.4/2184.8/2187.2/2189.6/2192.0/2194.4/2196.8/2199.2/2201.6/2204.0/2206.4/2208.8/2211.2/2213.6/2216.0/2218.4/2220.8/2223.2/2225.6/2228.0/2230.4/2232.8/2235.2/2237.6/2240.0/2242.4/2244.8/2247.2/2249.6/2252.0/2254.4/2256.8/2259.2/2261.6/2264.0/2266.4/2268.8/2271.2/2273.6/2276.0/2278.4/2280.8/2283.2/2285.6/2288.0/2290.4/2292.8/2295.2/2297.6/2300.0/2302.4/2304.8/2307.2/2309.6/2312.0/2314.4/2316.8/2319.2/2321.6/2324.0/2326.4/2328.8/2331.2/2333.6/2336.0/2338.4/2340.8/2343.2/2345.6/2348.0/2350.4/2352.8/2355.2/2357.6/2360.0/2362.4/2364.8/2367.2/2369.6/2372.0/2374.4/2376.8/2379.2/2381.6/2384.0/2386.4/2388.8/2391.2/2393.6/2396.0/2398.4/2400.8/2403.2/2405.6/2408.0/2410.4/2412.8/2415.2/2417.6/2420.0/2422.4/2424.8/2427.2/2429.6/2432.0/2434.4/2436.8/2439.2/2441.6/2444.0/2446.4/2448.8/2451.2/2453.6/2456.0/2458.4/2460.8/2463.2/2465.6/2468.0/2470.4/2472.8/2475.2/2477.6/2480.0/2482.4/2484.8/2487.2/2489.6/2492.0/2494.4/2496.8/2499.2/2501.6/2504.0/2506.4/2508.8/2511.2/2513.6/2516.0/2518.4/2520.8/2523.2/2525.6/2528.0/2530.4/2532.8/2535.2/2537.6/2540.0/2542.4/2544.8/2547.2/2549.6/2552.0/2554.4/2556.8/2559.2/2561.6/2564.0/2566.4/2568.8/2571.2/2573.6/2576.0/2578.4/2580.8/2583.2/2585.6/2588.0/2590.4/2592.8/2595.2/2597.6/2600.0/2602.4/2604.8/2607.2/2609.6/2612.0/2614.4/2616.8/2619.2/2621.6/2624.0/2626.4/2628.8/2631.2/2633.6/2636.0/2638.4/2640.8/2643.2/2645.6/2648.0/2650.4/2652.8/2655.2/2657.6/2660.0/2662.4/2664.8/2667.2/2669.6/2672.0/2674.4/2676.8/2679.2/2681.6/2684.0/2686.4/2688.8/2691.2/2693.6/2696.0/2698.4/2700.8/2703.2/2705.6/2708.0/2710.4/2712.8/2715.2/2717.6/2720.0/2722.4/2724.8/2727.2/2729.6/2732.0/2734.4/2736.8/2739.2/2741.6/2744.0/2746.4/2748.8/2751.2/2753.6/2756.0/2758.4/2760.8/2763.2/2765.6/2768.0/2770.4/2772.8/2775.2/2777.6/2780.0/2782.4/2784.8/2787.2/2789.6/2792.0/2794.4/2796.8/2799.2/2801.6/2804.0/2806.4/2808.8/2811.2/2813.6/2816.0/2818.4/2820.8/2823.2/2825.6/2828.0/2830.4/2832.8/2835.2/2837.6/2840.0/2842.4/2844.8/2847.2/2849.6/2852.0/2854.4/2856.8/2859.2/2861.6/2864.0/2866.4/2868.8/2871.2/2873.6/2876.0/2878.4/2880.8/2883.2/2885.6/2888.0/2890.4/2892.8/2895.2/2897.6/2900.0/2902.4/2904.8/2907.2/2909.6/2912.0/2914.4/2916.8/2919.2/2921.6/2924.0/2926.4/2928.8/2931.2/2933.6/2936.0/2938.4/2940.8/2943.2/2945.6/2948.0/2950.4/2952.8/2955.2/2957.6/2960.0/2962.4/2964.8/2967.2/2969.6/2972.0/2974.4/2976.8/2979.2/2981.6/2984.0/2986.4/2988.8/2991.2/2993.6/2996.0/2998.4/3000.8/3003.2/3005.6/3008.0/3010.4/3012.8/3015.2/3017.6/3020.0/3022.4/3024.8/3027.2/3029.6/3032.0/3034.4/3036.8/3039.2/3041.6/3044.0/3046.4/3048.8/3051.2/3053.6/3056.0/3058.4/3060.8/3063.2/3065.6/3068.0/3070.4/3072.8/3075.2/3077.6/3080.0/3082.4/3084.8/3087.2/3089.6/3092.0/3094.4/3096.8/3099.2/3101.6/3104.0/3106.4/3108.8/3111.2/3113.6/3116.0/3118.4/3120.8/3123.2/3125.6/3128.0/3130.4/3132.8/3135.2/3137.6/3140.0/3142.4/3144.8/3147.2/3149.6/3152.0/3154.4/3156.8/3159.2/3161.6/3164.0/3166.4/3168.8/3171.2/3173.6/3176.0/3178.4/3180.8/3183.2/3185.6/3188.0/3190.4/3192.8/3195.2/3197.6/3200.0/3202.4/3204.8/3207.2/3209.6/3212.0/3214.4/3216.8/3219.2/3221.6/3224.0/3226.4/3228.8/3231.2/3233.6/3236.0/3238.4/3240.8/3243.2/3245.6/3248.0/3250.4/3252.8/3255.2/3257.6/3260.0/3262.4/3264.8/3267.2/3269.6/3272.0/3274.4/3276.8/3279.2/3281.6/3284.0/3286.4/3288.8/3291.2/3293.6/3296.0/3298.4/3300.8/3303.2/3305.6/3308.0/3310.4/3312.8/3315.2/3317.6/3320.0/3322.4/3324.8/3327.2/3329.6/3332.0/3334.4/3336.8/3339.2/3341.6/3344.0/3346.4/3348.8/3351.2/3353.6/3356.0/3358.4/3360.8/3363.2/3365.6/3368.0/3370.4/3372.8/3375.2/3377.6/3380.0/3382.4/3384.8/3387.2/3389.6/3392.0/3394.4/3396.8/3399.2/3401.6/3404.0/3406.4/3408.8/3411.2/3413.6/3416.0/3418.4/3420.8/3423.2/3425.6/3428.0/3430.4/3432.8/3435.2/3437.6/3440.0/3442.4/3444.8/3447.2/3449.6/3452.0/3454.4/3456.8/3459.2/3461.6/3464.0/3466.4/3468.8/3471.2/3473.6/3476.0/3478.4/3480.8/3483.2/3485.6/3488.0/3490.4/3492.8/3495.2/3497.6/3500.0/3502.4/3504.8/3507.2/3509.6/3512.0/3514.4/3516.8/3519.2/3521.6/3524.0/3526.4/3528.8/3531.2/3533.6/3536.0/3538.4/3540.8/3543.2/3545.6/3548.0/3550.4/3552.8/3555.2/3557.6/3560.0/3562.4/3564.8/3567.2/3569.6/3572.0/3574.4/3576.8/3579.2/3581.6/3584.0/3586.4/3588.8/3591.2/3593.6/3596.0/3598.4/3600.8/3603.2/3605.6/3608.0/3610.4/3612.8/3615.2/3617.6/3620.0/3622.4/3624.8/3627.2/3629.6/3632.0/3634.4/3636.8/3639.2/3641.6/3644.0/3646.4/3648.8/3651.2/3653.6/3656.0/3658.4/3660.8/3663.2/3665.6/3668.0/3670.4/3672.8/3675.2/3677.6/3680.0/3682.4/3684.8/3687.2/3689.6/3692.0/3694.4/3696.8/3699.2/3701.6/3704.0/3706.4/3708.8/3711.2/3713.6/3716.0/3718.4/3720.8/3723.2/3725.6/3728.0/3730.4/3732.8/3735.2/3737.6/3740.0/3742.4/3744.8/3747.2/3749.6/3752.0/3754.4/3756.8/3759.2/3761.6/3764.0/3766.4/3768.8/3771.2/3773.6/3776.0/3778.4/3780.8/3783.2/3785.6/3788.0/3790.4/3792.8/3795.2/3797.6/3800.0/3802.4/3804.8/3807.2/3809.6/3812.0/3814.4/3816.8/3819.2/3821.6/3824.0/3826.4/3828.8/3831.2/3833.6/3836.0/3838.4/3840.8/3843.2/3845.6/3848.0/3850.4/3852.8/3855.2/3857.6/3860.0/3862.4/3864.8/3867.2/3869.6/3872.0/3874.4/3876.8/3879.2/3881.6/3884.0/3886.4/3888.8/3891.2/3893.6/3896.0/3898.4/3900.8/3903.2/3905.6/3908.0/3910.4/3912.8/3915.2/3917.6/3920.0/3922.4/3924.8/3927.2/3929.6/3932.0/3934.4/3936.8/3939.2/3941.6/3944.0/3946.4/3948.8/3951.2/3953.6/3956.0/3958.4/3960.8/3963.2/3965.6/3968.0/3970.4/3972.8/3975.2/3977.6/3980.0/3982.4/3984.8/3987.2/3989.6/3992.0/3994.4/3996.8/3999.2/4001.6/4004.0/4006.4/4008.8/4011.2/4013.6/4016.0/4018.4/4020.8/4023.2/4025.6/4028.0/4030.4/4032.8/4035.2/4037.6/4040.0/4042.4/4044.8/4047.2/4049.6/4052.0/4054.4/4056.8/4059.2/4061.6/4064.0/4066.4/4068.8/4071.2/4073.6/4076.0/4078.4/4080.8/4083.2/4085.6/4088.0/4090.4/4092.8/4095.2/4097.6/4100.0/4102



The right connectivity solution for your business is all wrapped up.

Your business demands a high-performance infrastructure to run its mission-critical business applications. And AT&T Canada can provide it locally, nationally or globally. After all, we offer a full range of secure connectivity solutions – all backed by a 99.99% service uptime guarantee and a 30-day risk-free guarantee.* To determine the right connectivity solution for your business, consider the following:

General solutions		Data Network solutions			
Vendor	Product	Product type	Implementation time	Factor Rating	Business
<ul style="list-style-type: none">Do your employees require e-mail, Web browsing or Internet-based applications?Does your business have a single office or multiple locations?Does your business have a LAN?How many users are on the LAN?		<ul style="list-style-type: none">Do your employees continuously need to share information such as inventory, CRM or financial data?Does your business have multiple locations?Are you deploying new business applications?Are you centralizing your server?			

Still not sure what your business requires? Contact an AT&T Canada Connectivity Specialist to assess your business' networking needs. Visit our Web Site or call today.

www.atccanada.ca/connect

1 866 841-8645



B O U N D L E S S

Voice Data Internet E-Business

Fifteen years ago

By Douglas Alder

Fifteen years ago, in early December 1987 (I am writing this before Christmas for a February issue deadline) I arrived back in Vancouver from Toronto. I had a freshly minted MBA, a wife and three kids, a Mac Plus and LaserWriter, and no job. A friend of mine had just been to San Francisco and brought back two fine newspapers dedicated to computers, *Microtimes* and *Computer Currents*. They were newspaper, with full-colour covers, and over 100 pages each. Looking at them, I thought "We could do this here in Vancouver!" So we did.

The marketplace we entered had already seen a few efforts at computer publishing. An annual directory called *COMP* had come and gone. There was a Victoria-based software newsletter called *Inside Software*, *Console Computers*, based on Toronto's *Computer*, was being circulated in small numbers and had no local adherents. David Clark's *Duppler Computers* had a glossy magazine for a while called *Duppler's Computer Buyer's Magazine*. It was primarily based on ad co-op dollars from the computer's suppliers and did not last long because of its lack of appeal to other computer dealers. There was another publication circulating at the time, called *Computer Consumers Guide*, published by a computer dealer, but it soon dropped away.

The first issue of *The Computer Paper* came out in February 1988. It was 16 pages, with a black, blue and yellow cover, contained 21 advertisements and articles about Canadian personal software,



We started in the right place at the right time and rode an incredible wave of enthusiasm and growth in the computer marketplace. The speed, power and capabilities of the computers and software have jumped light years ahead since that time.



Newsbytes syndicated articles, and a Macworld/Europe report. A full-page ad could be purchased for \$400.

In retrospect it was not very impressive, but it proved to be a foothold and *The Computer Paper* evolved rapidly over the next decade, had five offices across Canada, distribution in most major cities, and a monthly readership of half a million.

Some of the hardware featured in that first issue of *The Computer Paper* included a 10 MHz 286 CPU with a high-resolution TIL monitor and a Roland dot matrix printer for \$1,098. For another \$325 you could add a 20 MB hard disk to the basic floppy only system. On the back cover of a 9.54 MHz notebook that weighed 4 kg (9 lbs), featured 640 KB of

RAM and a "super readable" 80-character by 28-line screen. The unit sold for \$1,825 plus tax and disk. A deluxe model with a 20 MB hard disk was available for \$3,950.

In those days we circulated 30,000 copies of the paper in the Vancouver area, thinking that perhaps five percent of the population might be interested in computers. It was still a pretty steady thing to show interest in.

In looking at my old files from this time period, I found a family newsletter talking about *The Computer Paper*. It is dated April of 1988. The response from advertisers and readers has been great. Things are starting to come together well. Just yesterday, I got a call from a representative of Aldat, the developer of

PageMaker. He wanted me to do a review of the company's new product. You feel that you are getting somewhere when the big companies will send you their products for review. Despite the long hours, I am having fun and the money is coming in."

Of the 21 original advertisers who bought ads in that first 16-page edition, only two are still listed in the online yellow pages. Interestingly, both of these survivors are service sector businesses, not hardware resellers. That said, I dropped by Cordes Vancouver last year and met a number of people from those early years, and active in the business. The names may change but the same faces keep showing up.

We started in the right place at the right time and rode an incredible wave of enthusiasm and growth in the computer marketplace. The speed, power, and capabilities of the computers and software have jumped light years ahead since that time. As I tell my kids, "Back in those days you had to walk to the Internet, uphill both ways through snow drifts."

The rate of change may be at a temporary lull, but I believe that the next 15 years will bring more remarkable change within the industry. No doubt *The Computer Paper* will be there to monitor the changes. □

Douglas Alder was the original publisher and editor of *The Computer Paper* for 10 years. He is president of Homebase Interactive Publishing Ltd. in Vancouver. Homebase Internet Services is a Reseller database application development. He can be reached at Homebase Internet via phone on 604-666-1006 or by email at doug@hbase.net

PROMAR
Enterprises Inc. Ltd.

HEAD OFFICE:
8175 Sherbrooke St.
Vancouver, BC V5K 4E8
Tel (604) 322-1779
Fax (604) 322-1766

WHOLESALE:
14338-43rd Ave., N.E.
Calgary, AB T2E 2P3
Tel (403) 713-6488
Res (403) 717-6056

www.promarcanada.com
sales@promarcanada.com

DEALERS WANTED

INTERNET
E-MAIL

SuperCase.com

100/150V
600/450W
ATX Power Supplies

Pro III IDE
Card Reader

Surround Sound Speakers

TS-124

TS-132 TS-139 TS-140

TS-142 TS-143 TS-146

EPIC Replacement

YBS Int'l

Specializing in **CSA** approved Cases

- 100, 120, 150, 450 Wattmaster, Onboard
- CSA Approved ATX Power Supplies & Cases
- Surround Sound Speakers & Reparoards

PLATON 6532

Sales have gone flat. Just in time.

It's easy to see why. Flat, space saving screens, brighter, high contrast images, low heat output and energy saving technology add up to increased sales and margins. Find out more at www.lg.ca



www.lg.ca
1-888-LGCANADA



© 2000 LG Electronics Inc. All rights reserved. LG is a registered trademark of LG Electronics Inc.

LG
Digitally yours

SAKAKI'S COMPUTER
www.sakakis.com/pacific.html

Acorn
204-273-8868

Antec
800-435-2038

NCIX
800-451-5867
www.ncix.com

CompSmart
800-362-3475
www.compsmart.ca

COMPUTERS
800-522-8128
www.infocomp.com

DISCOVERY
800-313-4170
www.discovery.com

The first great decade of personal computing

By Gaele Bennett

In many ways, the years 1987 and 1988 were a time of transition. Eighteen 86-bit computers suddenly seemed outmoded, as more powerful 32-bit processors from Motorola and Intel powered a new class of machines. The first CD-ROMs were bringing a new level of sophistication to software titles and computer-based reference libraries.

It was an exciting time to be in the computer business. In February 1987, Commodore had just released the Amiga 300 and Amiga 3000. At the time, I was the president of a software development company enjoying brisk sales of a range of products for the Motorola-based Atari ST and Commodore Amiga computers. One of our products became a top 10-selling Amiga title, making us quite a lot of money.

Around this time, in the parking lot behind my recording studio, we collected the sound effects for Acclaim's still-in-development game, Hardball II with



I remember walking into a scene of pandemonium at a local computer store, where sales people were horrified to discover that every Amiga on the sales floor was infected. They even found viruses on the write-protected floppy disks inside shrink-wrapped packages on the store shelves!



a young Don Mattick (now president of Electronic Arts Canada). Hardball II subsequently won a Software Publishers Association award for best sports game of the year.

In March 1987, Apple released its first colour Macintosh. Suddenly, the Amiga and Atari ST didn't seem so advanced. Atari and Amiga owners had to console themselves with the fact that their machines were considerably less expensive. The Mac II, with its millions of colours and open architecture, cost several thousand dollars—an Atari or Amiga could be had for a few hundred.

Sensing the shifting tide, I paid a great deal of money for a Macintosh II and 16-bit AppleColor monitor around this time. A part of me still craved "power without the price," but HyperCard released by Apple that August, convinced me that the Mac was the platform with the best software.

Although the Mac II's 24-bit colour (which, ironically, HyperCard didn't

Continued on page 24



WWW.LIGHTSPEED.CA

Bring in the New Year with highspeed Internet Lightspeed

Proven performance since 1994

Residential ADSL \$29.95
Call for monthly specials

56K	128K	256K	512K	1024K
15 min	7 min	3 min	1.5 min	0.75 min

download in seconds
instead of hours

Join one of Canada's leading internet providers.

Highspeed and Dialup 1-866-866-8666

Business 1-866-866-8666

Web Hosting & Server Colocation

Business ADSL starting at \$59.95

Smooth stable connection. Free up your phone line.

Get Dialup Access starting at \$9.95

Get on Highspeed \$29.95*, free your phone line,

No more logins, up to 150 times faster than dialup!

*call for details on our current special

Lower Mainland 604-482-1190

Toll Free 1-866-798-0906

ML-1210 Laser Printer
 • 12 Pages Per Minute
 • 4000x1200 dpi
 • 48MB & 100K RAM

ML-1400 Laser HP
Printer • 95 Pages PPM
37600 • BULKY / EMS PLAIN

Color LASER
 100-120 Pages Per Minute
 Low Per Page Cost
 100-120 Lines Per Inch

brother
MFC

[illegible]

FREE!!!
INSTALLATION
Upgrade system for \$1499
*1600 Burn CPU
*ATI-12-8MB
Motherboard
*Video ASP
*3D Sound PCI
*10/100 Network

INSTALLATION
included
Add Storage Space
from \$105

























































































































































879
 800-2-2000 800-2-2000
 • True 800 2-2000 toll-free
 • 800-2-2000 2-2000
 • PC Fax • Color • 2000

[illegible]

1. **1.89**
 2. **1.35**
 3. **1.75**

 <p>83 Freedom Sevens Quarter 30MA</p>	 <p>En 399 15" LDD 599 17" LDD</p>
---	---

division

Wall-to-Wall

Flat Monitor

Wall-to-Wall

Flat Monitor

4000U Flatbed Scanner

- Ultra-Mini Scanner
- No adapter required

4000U Flatbed Scanner

• Scan to Your System

Canon

		
Kits-Kleen Probiotic	Master-4 power portfolio	Master-4 power portfolio
\$159	\$159	\$159

Disco **www.Ry Wi do**

Keyboard	Logitech	\$19.99
Mouse	Logitech	\$19.99
Monitor	Viewsonic	\$199.99
Printer	HP	\$199.99
Scanner	HP	\$199.99
Modem	HP	\$19.99
Router	Linksys	\$199.99
Switch	Linksys	\$199.99
Firewall	Linksys	\$199.99
UPS	APC	\$199.99
Backup Software	Acronis	\$19.99
Antivirus Software	Norton	\$19.99
Security Software	McAfee	\$19.99
Operating System	Microsoft	\$199.99
Office Software	Microsoft	\$199.99
Web Browser	Internet Explorer	\$0.00
Email Client	Outlook Express	\$0.00
Instant Messenger	AIM	\$0.00
File Sharing Software	NFS	\$0.00
Remote Access Software	VNC	\$0.00
Virtual Machine Software	VMware	\$19.99
Cloud Storage Service	Dropbox	\$0.00
Cloud Sync Service	OneDrive	\$0.00
Cloud Backup Service	Carbonite	\$19.99
Cloud Email Service	Gmail	\$0.00
Cloud Office Suite	Google Docs	\$0.00
Cloud Collaboration Tool	Slack	\$0.00
Cloud Project Management Tool	Asana	\$0.00
Cloud CRM System	Salesforce	\$19.99
Cloud ERP System	SAP	\$199.99
Cloud HR System	Workday	\$199.99
Cloud Payroll System	ADP	\$199.99
Cloud Accounting System	QuickBooks	\$19.99
Cloud Inventory System	NetScout	\$19.99
Cloud Analytics System	Tableau	\$199.99
Cloud Reporting System	Power BI	\$199.99
Cloud Dashboard System	Tableau	\$199.99
Cloud Alert System	PagerDuty	\$19.99
Cloud Incident Response System	Incident Response	\$199.99
Cloud Forensic System	Forensic	\$199.99
Cloud Compliance System	Compliance	\$199.99
Cloud Security System	Security	\$199.99
Cloud Audit System	Audit	\$199.99
Cloud Risk Management System	Risk Management	\$199.99
Cloud Business Continuity System	Business Continuity	\$199.99
Cloud Disaster Recovery System	Disaster Recovery	\$199.99
Cloud Backup System	Backup	\$199.99
Cloud Archiving System	Archiving	\$199.99
Cloud Migration System	Migration	\$199.99
Cloud Integration System	Integration	\$199.99
Cloud Interoperability System	Interoperability	\$199.99
Cloud Collaboration System	Collaboration	\$199.99
Cloud Productivity System	Productivity	\$199.99
Cloud Performance System	Performance	\$199.99
Cloud Scalability System	Scalability	\$199.99
Cloud Reliability System	Reliability	\$199.99
Cloud Availability System	Availability	\$199.99
Cloud Security System	Security	\$199.99
Cloud Privacy System	Privacy	\$199.99
Cloud Access System	Access	\$199.99
Cloud Authentication System	Authentication	\$199.99
Cloud Authorization System	Authorization	\$199.99
Cloud Accounting System	Accounting	\$199.99
Cloud Finance System	Finance	\$199.99
Cloud HR System	HR	\$199.99
Cloud Payroll System	Payroll	\$199.99
Cloud Tax System	Tax	\$199.99
Cloud Legal System	Legal	\$199.99
Cloud Compliance System	Compliance	\$199.99
Cloud Security System	Security	\$199.99
Cloud Audit System	Audit	\$199.99
Cloud Risk Management System	Risk Management	\$199.99
Cloud Business Continuity System	Business Continuity	\$199.99
Cloud Disaster Recovery System	Disaster Recovery	\$199.99
Cloud Backup System	Backup	\$199.99
Cloud Archiving System	Archiving	\$199.99
Cloud Migration System	Migration	\$199.99
Cloud Integration System	Integration	\$199.99
Cloud Interoperability System	Interoperability	\$199.99
Cloud Collaboration System	Collaboration	\$199.99
Cloud Productivity System	Productivity	\$199.99
Cloud Performance System	Performance	\$199.99
Cloud Scalability System	Scalability	\$199.99
Cloud Reliability System	Reliability	\$199.99
Cloud Availability System	Availability	\$199.99
Cloud Security System	Security	\$199.99
Cloud Privacy System	Privacy	\$199.99
Cloud Access System	Access	\$199.99
Cloud Authentication System	Authentication	\$199.99
Cloud Authorization System	Authorization	\$199.99
Cloud Accounting System	Accounting	\$199.99
Cloud Finance System	Finance	\$199.99
Cloud HR System	HR	\$199.99
Cloud Payroll System	Payroll	\$199.99
Cloud Tax System	Tax	\$199.99
Cloud Legal System	Legal	\$199.99
Cloud Compliance System	Compliance	\$199.99
Cloud Security System	Security	\$199.99
Cloud Audit System	Audit	\$199.99
Cloud Risk Management System	Risk Management	\$199.99
Cloud Business Continuity System	Business Continuity	\$199.99
Cloud Disaster Recovery System	Disaster Recovery	\$199.99
Cloud Backup System	Backup	\$199.99
Cloud Archiving System	Archiving	\$199.99
Cloud Migration System	Migration	\$199.99
Cloud Integration System	Integration	\$199.99
Cloud Interoperability System	Interoperability	\$199.99
Cloud Collaboration System	Collaboration	\$199.99
Cloud Productivity System	Productivity	\$199.99
Cloud Performance System	Performance	\$199.99
Cloud Scalability System	Scalability	\$199.99
Cloud Reliability System	Reliability	\$199.99
Cloud Availability System	Availability	\$199.99
Cloud Security System	Security	\$199.99
Cloud Privacy System	Privacy	\$199.99

Food 10/100 A P
1119
10/100 A P
1119

AT&T
AT&T 8700
+ 12700 20
+ 3070

	Canon PowerShot G9 \$269	
Pro EX	Color \$620	
	Flame Pattern	
	Leather or "CNC"	
		
		
		
		
		
		

[illegible]

LC	10000	ULTRA 320	0.360
LV	10000	ULTRA 320	0.380
LV	10000	ULTRA 320	0.400
LV	15000	ULTRA 320	0.1170
FLV	10000	ULTRA 140	0.1610
	10000	ULTRA 140	0.270
	10000	ULTRA 140	0.400
	10000	ULTRA 140	0.620
	10000	ULTRA 140	0.800

D-Link
TD4
Wireless 4-Port
Gigaset Adapter

PHILIP L. HARRIS

Mobile Internet On the ROAD

72.432	DEPT
18.428	KOHD
1808	KJUN
26.708	HNW
2936	KJUN
73.408	HNW
7308	KJUN

10000	ULTRA 140	\$ 1999
10000	ULTRA 120	\$ 2699
10000	ULTRA 320	\$ 2379
10000	ULTRA 180	\$ 3999
10000	ULTRA 280	\$ 4399
10000	ULTRA 160	\$ 8099
10000	ULTRA 200	\$ 8899

Wireless 11Mbps
1000k Access
\$159 B.T.
0.8


USE & SHARE - Mobility Service
 Charge Applications Call for Quote!
SPIN Wireless
 PDA's, Card

1818 TPT LCD Display
 • 1818 (T) Variable **519**
 • 1818 (T) 1818 (T)
 • 1818 (T) 1818 (T) (T) 1818 (T) 1818 (T)

SynMaster 1820
 • 1820 (T) 1820 (T)
 • 1820 (T)

SynMaster 1821
 • 1821 (T) 1821 (T)

SynchMaster

- 17" (16") x 12" Display
- 8.25mm (1/2") Pitch
- 1200 x 1024 (4096) Colors

SynchMaster

- 17" (16") x 12" Display
- 8.25mm (1/2") Pitch
- 1200 x 1024 (4096) Colors

199	NE
100	NE
239	NE
100	NE
100	NE

BC 17" Flat A375F	\$219
ED 19" Flat A505F	\$339
EG 15" LCD with 5W speaker	\$589

[illegible]

• 800 S	\$399
• Dual Tapet	
SynchMaster 1745	
• 1.1MHz 80286 Rom	
• 4.2Mhz Data Pkcs	\$629
• 100% IBM PC/P	
SynchMaster 181N	
• 1240x1024 Res	\$1199
• 500 S	
• 3000 Pages	

SynclMaster I
• 15" (38" V) (Diagonal)
• 48 pins (16 pins)
• 1 year (2 year) warranty

SynclMaster I
• 11" (28" V)
• Standard Flat
• 128K x 256 x 256

 3.99
 3.99
 3.99
 3.99

EC15" LCD \$439
EC17" LCD \$499
EC18" LCD \$599
Same Alert!!!

CREATIVE

AgriMaster 240T
• 1810x1580 mm
• Dual Input 2000d
• 24 Inch Viewport
\$499

 **COMP**

• 22" (38" w/feet)
 • 12.5mm A/C Feeder
 • 20-40dBm Pow.



Micro

[illegible]

Authorized Reseller

102 - 1245 West Broadway
Vancouver, B.C. V6H 1G7

all product features, trademarks and registered trademarks are properties of their respective owners.

©2008/2009 The LEGO Group. All Rights Reserved. www.lego.com



NCIX.com

c Builder

@NCIX.com

Systems built with **5007FX** boards include a bonus \$299 USD worth of software!



For more details, visit ncix.com. *Includes software only. Product not shown.

24/7 support and **EXACTLY** what you want

Chatting ONLINE • Call 1-877-777-7777

PC BUILDER SYSTEMS

PC Builder Systems Feature the Intel® Pentium® 4 processor

The Intel® Pentium® 4 processor is the latest generation of Intel processors designed to deliver advanced performance for emerging web and PC technologies. Based on Intel® NetBurst® Microarchitecture, the Pentium 4 processor provides superior performance for users who demand the latest technology.



Athlon

accelerate™ with
Dual-Core Architecture

AMD VALUE SYSTEM

AMD Athlon® XP 1700+ Processor

2GB RAM/4GB HD/80GB
SATA RAID 0/4 or SATA RAID 0/10
2GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$534 Windows XP Home \$349
Windows XP Professional \$215
Learning Module

AMD PERFORMANCE SYSTEM

AMD Athlon® XP 2100+ Processor

2GB RAM/4GB HD/80GB
SATA RAID 0/4 or SATA RAID 0/10
2GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$838 Windows XP Home \$619
Windows XP Professional \$219
Learning Module

AMD EXTREME SYSTEM

AMD Athlon® XP 2400+ Processor

3 Gigabyte RAM/8GB HD/100GB
SATA RAID 0/4 or SATA RAID 0/10
3GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$1280 Windows XP Home \$919
Windows XP Professional \$361
Learning Module



the power of your
single system

INTEL VALUE SYSTEM

Celeron® L.7 GHz Processor

2GB RAM/4GB HD/80GB
SATA RAID 0/4 or SATA RAID 0/10
2GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$536 Windows XP Home \$349
Windows XP Professional \$215
Learning Module

INTEL PERFORMANCE SYSTEM

Pentium® L.7 GHz Processor

2GB RAM/4GB HD/80GB
SATA RAID 0/4 or SATA RAID 0/10
2GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$970 Windows XP Home \$619
Windows XP Professional \$351
Learning Module

INTEL EXTREME SYSTEM

Pentium® L.7 GHz Processor

3 Gigabyte RAM/8GB HD/100GB
SATA RAID 0/4 or SATA RAID 0/10
3GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$1491 Windows XP Home \$919
Windows XP Professional \$572
Learning Module



accelerate™ your gaming
performance

NCIX SYSTEMONE HIGH PERFORMANCE PC

AMD Athlon® XP 2700+ Processor

2GB RAM/4GB HD/80GB
SATA RAID 0/4 or SATA RAID 0/10
2GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$2940 Includes Windows XP Home \$199
Windows XP Professional \$345
Learning Module

EXTREME GAMING SYSTEM

AMD Athlon® XP 2400+ Processor

3 Gigabyte RAM/8GB HD/100GB
SATA RAID 0/4 or SATA RAID 0/10
3GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$1827 Windows XP Home \$919
Windows XP Professional \$908
Learning Module

PERFORMANCE NETWORK SERVER

Intel Pentium® 4 2.53 GHz

3GB RAM/8GB HD/100GB
SATA RAID 0/4 or SATA RAID 0/10
3GB max capacity of PC2-5300 DDR
3.5 TB HD
60 GB DVD-RW
Built-in Audio and Video
Power Assistant, Mouse & Speakers
57" True Color w/ 1600x1200
3 Year Limited and 1 Year Parts Limited Warranty

\$1193 Windows XP Home \$919
Windows XP Professional \$274
Learning Module

Samsung 230E 15" LCD Monitor
\$459 Reg. \$559.00
Shipping \$174.00

Samsung SyncMaster 1510 15" LCD
\$449 Reg. \$489.00
Shipping \$174.00

Maxtor DiamondStar 9L 80 GB Hard Drive
\$139 Reg. \$139.99
Shipping \$20.00

Western Digital WD 40 GB 7200 RPM Hard Drive
\$128 Reg. \$133.47
Shipping \$20.00

Seagate Barracuda 40 GB ATA-100 Hard Drive
\$129 Reg. \$139.99
Shipping \$20.00

Microsoft Wireless Keyboard & Optical Mouse
\$38 Reg. \$49.99
Shipping \$12.00

Lipson 15.5" DVD-RW Internal Drive w/ Software
\$58 Reg. \$69.99
Shipping \$12.00

Sony 15.1" DVP / DVN CD-RW/DVD-RW
\$65 Reg. \$69.99
Shipping \$12.00

LG DVD-RW/DVD-RW CD-RW
\$32 Reg. \$37.99
Shipping \$12.00

Lenovo Celeron 400 EPI Laptop Printer
\$239 Reg. \$249.99
Shipping \$12.00

Genius 12.1" MagniColor Compact Flatbed Card
\$68 Reg. \$79.99
Shipping \$12.00

US Robotics 22" nVidia GeForce 2 Port VFP/Router
\$210 Reg. \$229.99
Shipping \$12.00

US Robotics Wireless 3-Port VFP/Router
\$209 Reg. \$219.99
Shipping \$12.00

US Robotics Wireless PC Card - 23 nVidia GeForce 2
\$99 Reg. \$109.99
Shipping \$12.00

Invision PC121 522 megabyte 500MB 240 pin
\$89 Reg. \$99.99
Shipping \$12.00

PC121 256 megabyte 60 RAM 240 pin
\$89 Reg. \$99.99
Shipping \$12.00

Samsung 256 megabyte PC1700 668333
\$105 Reg. \$109.99
Shipping \$12.00

AND MICROSOFT WIRELESS KEYBOARD & MOUSE (includes both) \$44.95

AND MICROSOFT WIRELESS PC CARD (includes both) \$99.95

AND MICROSOFT WIRELESS PC CARD (includes both) \$99.95

AND MICROSOFT WIRELESS PC CARD (includes both) \$99.95

© 2002 NCIX/Intel/AMD/ATI/Seagate

THE COMPUTER SHOP • BOSTON • FEBRUARY 2002 • 21



ICI COMPUTER INC.

www.ici.computer.com
(Visit our website for latest price, special & quotation) Email ici@ici.computer.com

TEL: 273-1368

SALES: (Mon-Fri) 9:00-5:00 PM, Sat 9:00-12:00 PM, Sun 10:00-12:00 PM
TECH: (Mon-Fri) 9:00-5:00 PM, Sat 9:00-12:00 PM, Sun 10:00-12:00 PM
FAX: (Mon-Fri) 273-5248

Supporting Retail
Business Through Us

Digital Camera Special

- Canon S230 (3.0 MP) **\$358/1100**
- Fuji S20 (2.0 MP) **\$309/900**
- Sony P51 (1.0 MP) **\$379/950**

LCD Panel Special

- Acer AL151 15" LCD Panel **\$398**
- Samsung 1515 15" LCD Panel **\$448**
- Viewsonic V5500 17" LCD Panel **\$538**

Notebook Special

- Acer 235X Notebook (4000) **\$1298**
- Fujitsu C2300 (4000) **\$1098**
- Toshiba T1110 (4000) **\$1168**

Intel P4 Dream Machine - New Year Special

P-4 Best Buy

Intel Pentium 4 Processor (530) 4 MB
Cache, 100MHz DDR RAM
80GB 7200rpm HDD
ATI Radeon 9800 Pro 64MB DVT
ATI Power 2000 P/S
Acer AL151 15" Widescreen LCD
15" DVI 2046 x 1540mm LCD
800-414-6546
AC-91 3D Audio (C/S)
10/100 Ethernet NIC (C/S)
1800 Series Speakers
Samsung T202P 17" Flat Monitor **\$810**
Samsung T202P 17" LCD Panel **\$498** **\$323/800**

\$528
1000/1000

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P-4 Dream Machine

Intel Pentium 4 Processor (530) 4 MB
Cache, 100MHz DDR RAM
80GB 7200rpm HDD
ATI Radeon 9800 Pro 64MB DVT
ATI Power 2000 P/S
Acer AL151 15" Widescreen LCD
15" DVI 2046 x 1540mm LCD
800-414-6546
AC-91 3D Audio (C/S)
10/100 Ethernet NIC (C/S)
1800 Series Speakers
Samsung T202P 17" Flat Monitor **\$810**
Samsung T202P 17" LCD Panel **\$498** **\$323/800**

\$1098

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P-4 Dream Machine Plus

Intel Pentium 4 Processor (530) 4 MB
Cache, 100MHz DDR RAM
80GB 7200rpm HDD
ATI Radeon 9800 Pro 64MB DVT
ATI Power 2000 P/S
Acer AL151 15" Widescreen LCD
15" DVI 2046 x 1540mm LCD
800-414-6546
AC-91 3D Audio (C/S)
10/100 Ethernet NIC (C/S)
1800 Series Speakers
Samsung T202P 17" Flat Monitor **\$810**
Samsung T202P 17" LCD Panel **\$498** **\$323/800**

\$1598

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

P4-530 (4000) **\$398**

NoteBook

Compaq P4-1000 4000 Pocket PC
Palm OS 1.0, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 11.0, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 12.0, 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 12.9, 13.0, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.9, 14.0, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7, 14.8, 14.9, 15.0, 15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 16.0, 16.1, 16.2, 16.3, 16.4, 16.5, 16.6, 16.7, 16.8, 16.9, 17.0, 17.1, 17.2, 17.3, 17.4, 17.5, 17.6, 17.7, 17.8, 17.9, 18.0, 18.1, 18.2, 18.3, 18.4, 18.5, 18.6, 18.7, 18.8, 18.9, 19.0, 19.1, 19.2, 19.3, 19.4, 19.5, 19.6, 19.7, 19.8, 19.9, 20.0, 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.8, 20.9, 21.0, 21.1, 21.2, 21.3, 21.4, 21.5, 21.6, 21.7, 21.8, 21.9, 22.0, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 22.7, 22.8, 22.9, 23.0, 23.1, 23.2, 23.3, 23.4, 23.5, 23.6, 23.7, 23.8, 23.9, 24.0, 24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.8, 24.9, 25.0, 25.1, 25.2, 25.3, 25.4, 25.5, 25.6, 25.7, 25.8, 25.9, 26.0, 26.1, 26.2, 26.3, 26.4, 26.5, 26.6, 26.7, 26.8, 26.9, 27.0, 27.1, 27.2, 27.3, 27.4, 27.5, 27.6, 27.7, 27.8, 27.9, 28.0, 28.1, 28.2, 28.3, 28.4, 28.5, 28.6, 28.7, 28.8, 28.9, 29.0, 29.1, 29.2, 29.3, 29.4, 29.5, 29.6, 29.7, 29.8, 29.9, 30.0, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 30.8, 30.9, 31.0, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, 31.7, 31.8, 31.9, 32.0, 32.1, 32.2, 32.3, 32.4, 32.5, 32.6, 32.7, 32.8, 32.9, 33.0, 33.1, 33.2, 33.3, 33.4, 33.5, 33.6, 33.7, 33.8, 33.9, 34.0, 34.1, 34.2, 34.3, 34.4, 34.5, 34.6, 34.7, 34.8, 34.9, 35.0, 35.1, 35.2, 35.3, 35.4, 35.5, 35.6, 35.7, 35.8, 35.9, 36.0, 36.1, 36.2, 36.3, 36.4, 36.5, 36.6, 36.7, 36.8, 36.9, 37.0, 37.1, 37.2, 37.3, 37.4, 37.5, 37.6, 37.7, 37.8, 37.9, 38.0, 38.1, 38.2, 38.3, 38.4, 38.5, 38.6, 38.7, 38.8, 38.9, 39.0, 39.1, 39.2, 39.3, 39.4, 39.5, 39.6, 39.7, 39.8, 39.9, 40.0, 40.1, 40.2, 40.3, 40.4, 40.5, 40.6, 40.7, 40.8, 40.9, 41.0, 41.1, 41.2, 41.3, 41.4, 41.5, 41.6, 41.7, 41.8, 41.9, 42.0, 42.1, 42.2, 42.3, 42.4, 42.5, 42.6, 42.7, 42.8, 42.9, 43.0, 43.1, 43.2, 43.3, 43.4, 43.5, 43.6, 43.7, 43.8, 43.9, 44.0, 44.1, 44.2, 44.3, 44.4, 44.5, 44.6, 44.7, 44.8, 44.9, 45.0, 45.1, 45.2, 45.3, 45.4, 45.5, 45.6, 45.7, 45.8, 45.9, 46.0, 46.1, 46.2, 46.3, 46.4, 46.5, 46.6, 46.7, 46.8, 46.9, 47.0, 47.1, 47.2, 47.3, 47.4, 47.5, 47.6, 47.7, 47.8, 47.9, 48.0, 48.1, 48.2, 48.3, 48.4, 48.5, 48.6, 48.7, 48.8, 48.9, 49.0, 49.1, 49.2, 49.3, 49.4, 49.5, 49.6, 49.7, 49.8, 49.9, 50.0, 5

12

Be Safe On The Internet!

Our Internet service comes fully loaded

\$13.95/mth
56K Dial-Up

- No Usage Attached
- No Hidden Conditions
- No Contract Required

Dial-Up Service Comparison

ISP	IREADY	TELUS	AOL	LOOK
Fee	\$13.95	\$26.95	\$22.95	\$22.95
Hrs/mth	Unlimited	60	Unlimited	Unlimited
Junk Mail Filter	Yes	No	No	No
Anti-Virus	Yes	No	No	No

Based on web-published information on Nov. 22, 2002

Need More Speed?
Highspeed ADSL
\$34.95/mth
Residential Services
More Features, Better Price

All Iready.ca Customers Enjoy
Worry-Free, Peace of Mind Internet Access

- Junk Mail Filtering
- Anti-virus Protection
- Firewall Protection
- No Charge Family Safe
- Content Filtering (optional)
- Unlimited Access
- No Charge Extra Email IDs
- Web Base Email
- 7 Days / Week Support

Call Us Today:
604-247-1234

Or Visit Our Website:
www.iready.ca

IREADY.CA

You Get The Best For Less, It Is That Simple

The first great decade

Continued from page 14

exploit) set it far ahead of the primitive PC graphics of the day, things were moving quickly in the PC world. In April 1987, the VGA standard and a higher-resolution 8514A display adapter were announced by IBM. By the fall, VGA adapters were a hot commodity. A rapidly growing Canadian company called ATI, founded in 1985, couldn't seem to make enough of them.

A few years earlier, Apple had touted the Macintosh as "The computer for the rest of us." Suddenly, that slogan seemed like an understatement, as the burgeoning market for PC clones was rapidly driving down the cost of IBM-compatible components—a step that would, over the coming years, ultimately render Atari and Commodore irrelevant.

By the autumn of 1987, the PC market was really getting momentum. Microsoft released Bookshelf, its first CD-ROM application in September, and a month later, shipped Excel for Windows, the first PC-compatible version of the spreadsheet it had shown to a separately unreleased Steve Jobs back in 1985.

The first Araps virus emerged in November 1987 and, within the next few months, affected almost every Araps user who swapped floppies with others. I remember walking into a store of purveyors at a local computer store, where sales people were hurried to discover that every Araps on the sales floor was infected. They even found viruses on the write-protected floppy disks made shrink-wrapped packages on the store shelves.

Less than a month later, the first widely distributed virus affecting IBM PCs was discovered. The PCs of the day were running Windows 2.0. IBM shipped its six-month PS/2 and, that December, launched OS/2 1.0. Microsoft's stock hit \$100 per share. Microsoft had almost sold half a million computer virus and, by the end of the year, a million copies of Windows.

All at once, it seemed that the next era of computing was upon us. The time had come for the PC. A few months later, I picked up the author's first issue of a new publication called *The Computer Paper* and watched its progress closely in the months ahead. I visited The Computer Paper's Vancouver office one day and was offered a job.

Continued on page 27

Personalities of the early PC era

By Geoff Wansborough

Fifteen years, huh? It seems like 50. When *The Computer Paper* was born, I was five years into a nine-year stint of working and living in London, England—and was involved in launching my own technology magazines and newsletters.

My father-in-law who owned a sewing machine store on West Broadway in Vancouver, mentioned on the phone one day that this technology publishing business must be hitting the big time because a new title, called *The Computer Paper*, had just been published in Vancouver. And he knew about it because he had just sold a sewing machine to the founder of the publication, a young, amiable chap called Korten Singh Khalsa (a.k.a. Theodore Alder).

It was a fascinating time in the technology transition. We were part the few flush of an fledgling industry and some



The first great decade

Continued from page 24

soon became the resident PC expert—my distant, far command prompts notwithstanding. It seemed *extremely* ironic to me at the time that the employees at TCP—widely perceived as a PC-centric publication—were almost exclusively Mac users.

By October 1988, even the exciting innovations of 1987 weren't looking as advanced anymore, as Apple chief jobs, always thinking a few steps ahead, had just announced the long-awaited Mac IIx Cube, sporting a 17-inch monitor (and Display PostScript). User-based operating systems, a high-capacity removable optical drive—and an floppy drive. It's amazing that, 15 years later, this feature set can still be considered forward-looking.

I am tempted to draw parallels between 2002 to 2009 and that pivotal 1987/1988 era. In each case, a new, more powerful generation of processors is poised to emerge. Percy will threaten smaller software developers, and open computing—new, repositioned as “cloud computing”—is still being touted as the next big thing.

Jobs is probably still thinking 15 years in the future. However, the world today is a much different place. It's probably never see another “gold rush” as dramatic as the one of those early days, or the first years of the dot-com boom.

Some say the real golden age—the third great age of computing—will be when our computers, handhelds, and networks “just work.” I see glimpses of this possible future from time to time, when I run Mac OS X, Windows XP, or some of the freemium Linux distributions on my various computers, but it's clear there's still plenty of room for improvement.

The trouble is not everyone wants the kind of system designs that may be required for appliance-like functionality and industrial-strength security. Fewer options mean fewer potential conflicts. Increased surveillance, we are told, means greater security. I know one thing for sure: just as there are those who refuse to give up their beloved command prompts, there will be some who will be unwilling to give up freedom for this pseudo security. □

Greene Street was, at various points in the 1990s, the managing editor, senior editor and editorial director of *The Computer Paper*. Today he owns and manages PCUsersGuide.com and MacUsersGuide.com and offers computer consulting, marketing, and training services.

1/8 Rack
20GB TRANSFER
\$150/mo

special introductory price

1/4 Rack
40GB TRANSFER
\$300/mo

special introductory price

1/2 Rack
100GB TRANSFER
\$550/mo

special introductory price

SERVER
Colocation
FOR LESS!

FULL Rack
200GB TRANSFER
\$995/mo

special introductory price

It's Time to Relocate Your Servers... to Our Brand New Colocation Facility Located in Burnaby, BC.



1/8 Rack:
19"W x 34"D x 17"H

1/4 Rack:
19"W x 35"D x 17"H

1/2 Rack:
19"W x 35"D x 40"H

Full Rack:
19"W x 34"D x 42"H

Services Include:

- Dedicated Server Cabinet
- Fully Redundant 10Gbps Network
- 100MB/Sec Fast Ethernet Switches/Ports
- UPS Backup Power
- Temperature Controlled Environment
- 24/7 Facility Access
- Secure Facility with 24 Hour Monitoring
- Online Traffic Reports
- Concessions - Car Parking

Call in2net Today for More Info. 604-608-6868. www.in2net.com

in2net
network inc.

Peripherals of the early PC era

Continued from page 28

separation for customers also matched that of the woodland creature, particularly the way he sold his products.

Stevie was famous for giving a good idea in a prototype stage, making plans for fast-track manufacturing, then selling pre-orders for the product by mail. Those pre-orders, in turn, would fund the actual manufacturing.

A product of Carnegie University and an intellectual belle at heart (he was a leading light in the British MENSA community), Sander's head for business never seemed as strong as his head for innovative ideas. He has been and bowed a number of times, but always seems to surface with new ideas.

In the beginning there was (John) Adam. Another entrepreneurial character I met during that period was former technology journalist John Adam Osborne. In the early 1980s, Osborne went from being industry observer to being an active participant with the release of the world's first

popular "transportable" computer, known as the Osborne One.

It was a sewing machine-sized computer that ran the old CP/M computer operating system, had a 486-sized keyboard that unclipped from the base of the unit, and a 32-character screen. It also included a popular word-processor package known as WordStar.

By the standards of the day, the Osborne One was a huge success and Adam's company grew by leaps and bounds (something he later chronicled in his memoir, *Hypocrit's Memoir*). Unfortunately, Osborne did not learn the one lesson in years of observing the early years of the computer industry should have taught him: keep your eye on IBM.

While Osborne was busy enjoying his first blast of success, a business group of IBM fans in Florida developed and launched a desktop computer. It became known as the IBM PC. Within two years of its launch, it was widely cloned and copied, and IBM PC-style systems dominated the market.

Osborne failed to recognize the impact of that change quickly enough. And his company faded from view within a few years. I caught up with Osborne shortly after this adventure when he launched another company called Paperback Software—on the premise that software should be sold like paperback books and part "shouldn't cost so much." The idea was good, but the products were mediocre, and the spreadsheet was enough like Lotus 1-2-3 that the company ended up in a messy and expensive litigation with Lotus Development. And Osborne never regained his former glory after rejoining the importance of the IBM PC.

The coming of Compaq

But there were fans. Texas understood the impact of IBM's entry into the market. They were led by a folk opinion-former Texas Instruments engineer called Raj Cason and backed financially by another longtime computer industry watcher, Ben Rosen.

Cason and his fellow Texas fan-

ly ditched out their idea for an IBM-compatible transportable computer on a table atop a restaurant one night, and New York-based Rosen came up with the first \$1 million to fund the adventure that became Compaq (which was acquired in 2002 by Hewlett-Packard). It was a huge win for Rosen, as he also got up the first \$1 million to fund Lotus Development's creation of the classic Lotus 1-2-3 spreadsheet, and now a division of IBM.

I first crossed paths with Rosen and Cason in London in late 1982. They were fresh from showing off their wares at the Comdex trade show in Las Vegas. Rosen walked into my office carrying a Compaq transportable and a copy of Lotus 1-2-3. He and Cason demonstrated the products and then we went for an enjoyable lunch at one of London's many fine French restaurants.

I kept up with Ben Rosen for many years and would regularly have "power breakfasts" with him and his business partner L.J. Serna whenever they came to London. Rosen stayed with Compaq

50% OFF Shipping*
50% OFF Shipping*
50% OFF Shipping*

DVD Media

Compaq 8.5" DVD-ROM Drives
10x/4x/16x DVD-ROM Drives
\$19.99 (Was \$39.99)

10x/4x/16x DVD-ROM Drives
10x/4x/16x DVD-ROM Drives
\$19.99 (Was \$39.99)

10x/4x/16x DVD-ROM Drives
10x/4x/16x DVD-ROM Drives
\$19.99 (Was \$39.99)

Auction4it.com

\$

Upgrades/Accessories
10x/4x/16x DVD-ROM Drives
\$19.99 (Was \$39.99)

10x/4x/16x DVD-ROM Drives
10x/4x/16x DVD-ROM Drives
\$19.99 (Was \$39.99)

Inkjet Cartridge

HP 64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1223/1224/1225/1226/1227/1228/1229/1230/1231/1232/1233/1234/1235/1236/1237/1238/1239/1240/1241/1242/1243/1244/1245/1246/1247/1248/1249/1250/1251/1252/1253/1254/1255/1256/1257/1258/1259/1260/1261/1262/1263/1264/1265/1266/1267/1268/1269/1270/1271/1272/1273/1274/1275/1276/1277/1278/1279/1280/1281/1282/1283/1284/1285/1286/1287/1288/1289/1290/1291/1292/1293/1294/1295/1296/1297/1298/1299/1300/1301/1302/1303/1304/1305/1306/1307/1308/1309/1310/1311/1312/1313/1314/1315/1316/1317/1318/1319/1320/1321/1322/1323/1324/1325/1326/1327/1328/1329/1330/1331/1332/1333/1334/1335/1336/1337/1338/1339/1340/1341/1342/1343/1344/1345/1346/1347/1348/1349/1350/1351/1352/1353/1354/1355/1356/1357/1358/1359/1360/1361/1362/1363/1364/1365/1366/1367/1368/1369/1370/1371/1372/1373/1374/1375/1376/1377/1378/1379/1380/1381/1382/1383/1384/1385/1386/1387/1388/1389/1390/1391/1392/1393/1394/1395/1396/1397/1398/1399/1400/1401/1402/1403/1404/1405/1406/1407/1408/1409/1410/1411/1412/1413/1414/1415/1416/1417/1418/1419/1420/1421/1422/1423/1424/1425/1426/1427/1428/1429/1430/1431/1432/1433/1434/1435/1436/1437/1438/1439/1440/1441/1442/1443/1444/1445/1446/1447/1448/1449/1450/1451/1452/1453/1454/1455/1456/1457/1458/1459/1460/1461/1462/1463/1464/1465/1466/1467/1468/1469/1470/1471/1472/1473/1474/1475/1476/1477/1478/1479/1480/1481/1482/1483/1484/1485/1486/1487/1488/1489/1490/1491/1492/1493/1494/1495/1496/1497/1498/1499/1500/1501/1502/1503/1504/1505/1506/1507/1508/1509/1510/1511/1512/1513/1514/1515/1516/1517/1518/1519/1520/1521/1522/1523/1524/1525/1526/1527/1528/1529/1530/1531/1532/1533/1534/1535/1536/1537/1538/1539/1540/1541/1542/1543/1544/1545/1546/1547/1548/1549/1550/1551/1552/1553/1554/1555/1556/1557/1558/1559/1560/1561/1562/1563/1564/1565/1566/1567/1568/1569/1570/1571/1572/1573/1574/1575/1576/1577/1578/1579/1580/1581/1582/1583/1584/1585/1586/1587/1588/1589/1590/1591/1592/1593/1594/1595/1596/1597/1598/1599/1600/1601/1602/1603/1604/1605/1606/1607/1608/1609/1610/1611/1612/1613/1614/1615/1616/1617/1618/1619/1620/1621/1622/1623/1624/1625/1626/1627/1628/1629/1630/1631/1632/1633/1634/1635/1636/1637/1638/1639/1640/1641/1642/1643/1644/1645/1646/1647/1648/1649/1650/1651/1652/1653/1654/1655/1656/1657/1658/1659/1660/1661/1662/1663/1664/1665/1666/1667/1668/1669/1670/1671/1672/1673/1674/1675/1676/1677/1678/1679/1680/1681/1682/1683/1684/1685/1686/1687/1688/1689/1690/1691/1692/1693/1694/1695/1696/1697/1698/1699/1700/1701/1702/1703/1704/1705/1706/1707/1708/1709/1710/1711/1712/1713/1714/1715/1716/1717/1718/1719/1720/1721/1722/1723/1724/1725/1726/1727/1728/1729/1730/1731/1732/1733/1734/1735/1736/1737/1738/1739/1740/1741/1742/1743/1744/1745/1746/1747/1748/1749/1750/1751/1752/1753/1754/1755/1756/1757/1758/1759/1760/1761/1762/1763/1764/1765/1766/1767/1768/1769/1770/1771/1772/1773/1774/1775/1776/1777/1778/1779/1780/1781/1782/1783/1784/1785/1786/1787/1788/1789/1790/1791/1792/1793/1794/1795/1796/1797/1798/1799/1800/1801/1802/1803/1804/1805/1806/1807/1808/1809/1810/1811/1812/1813/1814/1815/1816/1817/1818/1819/1820/1821/1822/1823/1824/1825/1826/1827/1828/1829/1830/1831/1832/1833/1834/1835/1836/1837/1838/1839/1840/1841/1842/1843/1844/1845/1846/1847/1848/1849/1850/1851/1852/1853/1854/1855/1856/1857/1858/1859/1860/1861/1862/1863/1864/1865/1866/1867/1868/1869/1870/1871/1872/1873/1874/1875/1876/1877/1878/1879/1880/1881/1882/1883/1884/1885/1886/1887/1888/1889/1890/1891/1892/1893/1894/1895/1896/1897/1898/1899/1900/1901/1902/1903/1904/1905/1906/1907/1908/1909/1910/1911/1912/1913/1914/1915/1916/1917/1918/1919/1920/1921/1922/1923/1924/1925/1926/1927/1928/1929/1930/1931/1932/1933/1934/1935/1936/1937/1938/1939/1940/1941/1942/1943/1944/1945/1946/1947/1948/1949/1950/1951/1952/1953/1954/1955/1956/1957/1958/1959/1960/1961/1962/1963/1964/1965/1966/1967/1968/1969/1970/1971/1972/1973/1974/1975/1976/1977/1978/1979/1980/1981/1982/1983/1984/1985/1986/1987/1988/1989/1990/1991/1992/1993/1994/1995/1996/1997/1998/1999/2000/2001/2002/2003/2004/2005/2006/2007/2008/2009/2010/2011/2012/2013/2014/2015/2016/2017/2018/2019/2020/2021/2022/2023/2024/2025/2026/2027/2028/2029/2030/2031/2032/2033/2034/2035/2036/2037/2038/2039/2040/2041/2042/2043/2044/2045/2046/2047/2048/2049/2050/2051/2052/2053/2054/2055/2056/2057/2058/2059/2060/2061/2062/2063/2064/2065/2066/2067/2068/2069/2070/2071/2072/2073/2074/2075/2076/2077/2078/2079/2080/2081/2082/2083/2084/2085/2086/2087/2088/2089/2090/2091/2092/2093/2094/2095/2096/2097/2098/2099/2100/2101/2102/2103/2104/2105/2106/2107/2108/2109/2110/2111/2112/2113/2114/2115/2116/2117/2118/2119/2120/2121/2122/2123/2124/2125/2126/2127/2128/2129/2130/2131/2132/2133/2134/2135/2136/2137/2138/2139/2140/2141/2142/2143/2144/2145/2146/2147/2148/2149/2150/2151/2152/2153/2154/2155/2156/2157/2158/2159/2160/2161/2162/2163/2164/2165/2166/2167/2168/2169/2170/2171/2172/2173/2174/2175/2176/2177/2178/2179/2180/2181/2182/2183/2184/2185/2186/2187/2188/2189/2190/2191/2192/2193/2194/2195/2196/2197/2198/2199/2200/2201/2202/2203/2204/2205/2206/2207/2208/2209/2210/2211/2212/2213/2214/2215/2216/2217/2218/2219/2220/2221/2222/2223/2224/2225/2226/2227/2228/2229/2230/2231/2232/2233/2234/2235/2236/2237/2238/2239/2240/2241/2242/2243/2244/2245/2246/2247/2248/2249/2250/2251/2252/2253/2254/2255/2256/2257/2258/2259/2260/2261/2262/2263/2264/2265/2266/2267/2268/2269/2270/2271/2272/2273/2274/2275/2276/2277/2278/2279/2280/2281/2282/2283/2284/2285/2286/2287/2288/2289/2290/2291/2292/2293/2294/2295/2296/2297/2298/2299/2300/2301/2302/2303/2304/2305/2306/2307/2308/2309/2310/2311/2312/2313/2314/2315/2316/2317/2318/2319/2320/2321/2322/2323/2324/2325/2326/2327/2328/2329/2330/2331/2332/2333/2334/233

until a few years ago, after more than 15 tumultuous years as chairman of the company, and helped select Michael J. Cappelletti to succeed Richard Pfeiffer as chief executive of the company.

The man behind Microsoft

Aside from the most compelling individual I have met in Bill Gates, I first encountered him back in 1983, when I visited a then-small Microsoft campus near Kirkland, Wash.

The company had won the contract to put its operating system on IBM's PC, had a few games that enjoyed a measure of popularity (such as *Olympic Decathlon* and *Flight Simulator*), and was beginning to dabble in producing its operating system for a consortium of Japanese home computer manufacturers (which resulted in something called MSX).

It had also announced, but was nowhere near shipping, a product called Microsoft Windows. The idea about what Windows could or might do were quite sketchy at the time, but it was clear that they would incorporate ideas that were then recently pioneered in the Xerox Star workstation and the ground-breaking Apple Lisa.

In fact, it was when Apple launched the original Macintosh—and Microsoft developed a spreadsheet called Excel to run on that computer—that I did my first major, on-down interview with Gates.

It was in the U.K. at the company's then-small office just outside London. And it was me and Bill in a room with a Macintosh, with him showing me around the product and answering questions as we went along.

All the classic Gates hallmarks were already there—the constant looking back and forth in the chair as we talked, the overly cautious way he steeled on each question with vague and the self-assured character of his replies.

Over the years, we have talked many times and the one key concept that I remember him describing—which applies as much to Microsoft today as it did when he talked to me about a 10-year ago—the notion of "embrace and extend." ☐

Paul Willebrandt has been involved in the technology scene as a writer, editor and entrepreneur for more than 20 years. He is a long-time contributor to *The Computer Paper*.

\$299* PUTS A LASER AT YOUR FINGERTIPS.



There are many reasons why laser printers have long been the office mainstay: fast, reliable output combined with crisp text copy. The Lexmark E210 laser puts these features right in your hands — but at a take home price of just \$299! The E210 laser — you'll give it the thumbs up to do business at home, or at the office.

LEXMARK
Power for printing ideas®
www.lexmark.com

E210 Laser | 12 ppm | \$299.00*

ContourSmart
100 West Georgia Street
Vancouver
(604) 688-2482 x330

Walrus Cove Computers
11809-96th Avenue
Langley
(604) 888-4878

Netlink Computer Inc.
5958-81 Highway
Burnaby
(604) 451-8882

CompuSmart
565 Yates St
Victoria
(250) 382-5675

Cartridge Computer Centre
945 Andre Drive West
Richmond
www.kaltec.com

* Limited time offer at participating dealers; street price may vary.

© 2002 Lexmark International, Inc. Lexmark and "Power for printing ideas" are trademarks of Lexmark International, Inc., and registered in the United States and other countries.

Five ways to leave your old computer

By Geoff Wheelwright

What do you do with an old computer? No one wants to throw out their trusty system after many years of good service, but the need to run newer applications—which typically demand greater processing power, more memory, extra storage, and additional hardware—often requires that you do just that.

There are a number of choices available to you at that point. You can make the old machine within your house (or your company), dedicate it to a single task, give it away to a friend, donate it to a charity, or sell it.

Option 1: Keeping it in the family

If your old system is the only computer in the house (prior to buying to replace it), you may want to keep it. If you have several children, for example, one of them may wish to use it for simple word processing, basic Web browsing, playing older games—or even just learning basic keyboard, mouse, and computer operation skills.

Be aware, however, that members of your family will quickly start comparing the capabilities of the old system with the new one. If, for example, your old system is only capable of running a one-year-old version of Microsoft Works as its primary productivity application—and your new machine runs Windows XP and Office XP—your kids may be more inclined to wait for time on the new system than bother with the old one.

The other issue to consider is how

No one wants to throw out their trusty system after many years of good service, but the need to run newer applications—which typically demand greater processing power, more memory, extra storage, and additional hardware—often requires that you do just that.



much time you are willing to spend in maintaining the old system. Older versions of Microsoft Windows, for example, were much more prone to errors and crashing than Windows XP—and you may not wish to turn yourself into a "tech support" resource for the rest of your family. Likewise, hard disks may reach the limits of their MTBF (mean time between failure) rates, power supplies can fail, and on-board memory may reach the end of its life.

There is always the possibility, however, that your system will experience none of those problems—and that it will continue to quite happily run a limited set of applications well into the future with few problems. We'll have to make a judgment call on that. And that brings us to the next option.

Option 2: Dedicate It to a single task

Unlike almost any other kind of device, we expect our computers to do a huge number of different things every day, from e-mail to Web browsing to speed-shoot work to playing MP3 files and DVD movies. But it doesn't have to be that way.

If your old computer is capable of doing a single task extremely well, you just want it to continue doing that. Word processing is a perfect example of such an application. Most older computers are highly functional as slightly enhanced typewriters—provided that you have a compatible printer (and you can still get the ribbons, ink cartridges, or toner cartridges for them).

Surely, your old computer may end

up becoming a dedicated device for receiving faxes (many systems sold between 1991 and 1999 came with built-in fax modems and fax software), or the system you dedicate for printing contracts, memos, or fliers.

I guess the main point here is that the old systems could take some of the demand and burden off your new computer if there is a job that it can still do well—and that that job is done by someone else. If you are the only user of the computer, you will almost certainly want to use the newer system instead of the old one. In that situation, it may make sense to get rid of the old system.

Option 3: Give It to a friend

If you are going to give your old system to a friend, make sure he or she is a really good friend—and your friend knows something about the care and maintenance of older computers. Also, be clear about whether or not you are giving or "loaning" the system to your friend.

I'll tell you why I say all of this. Late last year I was out walking my dog on a cold, November day when I spotted an old Toshiba notebook computer lying discarded in an alley near my house. The computer and the "back style" power supply that went along with it were covered in snowdrift, but otherwise seemed to be in good shape.

I picked up the computer and we went back home and plugged it in. It ran perfectly, and had Windows 95 and Microsoft Office loaded on its hard drive.

I did all this because I was concerned

Continued on page 32

Toll Free: 877-664-6697

BARCODE EQUIPMENT

3"CCD SCANNER

\$249 TTL output - connects to an external decoder
RS-232 serial style with built-in decoder
Keyboard style with built-in decoder

\$1679 P300FZY Industrial Scanner - with P52 Cable
Equipped with 2nd Generation Fuzzy Logic
technology for reading damaged or poorly
printed bar codes.



PLASTIC CARD READERS/Writers

AMC 722 or the MSR 206 16 & Lo-Coervivity
with RenCode 2000 Version (M) \$2250
without software \$2650

MSR 106 Lo-Coervivity
with RenCode 2000 Version (M) \$1450
without software \$1250



Int'l: (613) 521-CARD

PORTABLE MAGNETIC STRIPE READERS

PMR102 with RenCode Buddy \$ 900
PMR202 with RenCode Buddy \$1500

www.canadianbarcode.com sales@canadianbarcode.com

211-1729 Bank Street Ottawa, Ontario

Five ways to leave your old computer

Continued from page 33

that the abandoned computer may have been the result of a burglary that had perhaps been interrupted. It turned out to be nothing nearly as dramatic as that.

In an effort to figure out who owned the computer, I ran Microsoft Office to see who the software was registered to. A name came on the screen and I then looked the person up in the phone book and called him to find out if he had been the victim of a burglary.

Unfortunately, all I did was strain an old friendship. It turned out that the computer was owned by a fellow in another part of town who had bought his old notebook to one of my neighbors. As it turned out, my neighbor was not able to get much use out of the notebook, so took it to a computer consultant who informed him that it was of little use. So he decided it was the ally. He later told me that he figured someone would pick it up and get some use from it.

Instead, after my call to the guy who actually owned the notebook, my neighbour had to march over to my house,

pick it up, then return it to his friend—with apologies for having thrown it out.

So consider whether or not you want to give your old computer to a friend. It just might not be worth it.

Option 4: Selling your old computer

Selling your old computer is a tricky business. There's a lot that can go wrong with old systems—and you want to make sure that if you do sell it, the buyer is totally aware that you do so without any guarantees or warranties. It should be sold entirely "as is." You do not want to have to continue to provide support for it once it leaves your hand.

Also remember that resale prices are only going to be a tiny fraction of what you paid for your system. To get an idea of prices, drop into a local used computer shop and you'll see what I mean. The fact is that the \$1,000 or so you charged for a new entry-level system buys far more computer than the \$500 or so you'll be lucky to get for your old machine.

And that new system will come with the latest operating system, enough memory to support all the latest applications, and so on. So the long and short of

it is that you are unlikely to make much money at all by selling your used system.

Option 5: Donating your computer

That is probably the most sensible option of all. There are a number of charities that specialize in taking in old computers, and refurbishing and repurposing them.

The Computers for Schools (dispo.gc.ca/) program is probably the most comprehensive and best-known such scheme in Canada. It boasts that it has found new homes for more than 395,000 computers since it started in 1993. In British Columbia alone, the group estimates that it redirects more than 250 tons of computer equipment from landfills each year.

The program is designed not only to encourage the further use of old computers, but it also helps train students in the repair and refurbishment of old systems, which could help them find technology-related work when they graduate.

And a number of government departments are participants in the scheme. Human Resources Development Canada

(HRDC; at www.hdc.gc.ca/), for example, has been involved since the creation of Computers for Schools and boasts that its youth employment strategy provides the funds to provide work terms refurbishing computers to young college graduates.

Of course, this by no means the only charitable group or agency that can make use of older computers. It is, however, one of the few that actually devotes and cultivates resources to refurbish and service older systems.

One caveat to any of the computer donation plans is that you should expect a whole lot in the way of a tax receipt for your donated system. Canada Customs and Revenue Agency (CCRA, the new name for Revenue Canada) only allows the issuance of receipts for a reasonable resale value for your old system—not the price you paid for it new six years ago.

In other words, the tax receipt (if the donor receiving it is obligated to issue such a receipt) is only going to be written for the kind of sum you would reasonably expect to receive if you were to sell it to a used computer shop. You may

Continued on page 40



ADSL

fast and secure

Residential Package

\$24.88 /month*

Business SOHO Package

\$44.88 /month*

Server Parking

\$1.50 /month

Web Hosting

\$12 /month

Unlimited Dial-up Service

Special \$10.00 /month*

MDI INTERNET INC.

www.mdi.ca

www.meganow.net

*restrictions apply check details

Working on the horizon

By Hari Singh Khosla

In its early years, the fledgling publishing company that produced *The Computer Paper* was a lean operation. Our marketplace advantages included very low advertising rates, low operating cost, and, above all, being in the right place at the right time. In other words, TCP was *not* another publishing startup, searching for ad sales.

Why did success smile upon us? One of the key answers may be that the staff loved and headed the communication/technology revolution that was being documented in the paper. TCP's mission was to provide information about emerging TCP technology. Figuratively, we were scanning the horizon for new tools and techniques to present to our readers. In order to keep us current, Doug Alder set up shop out on that horizon—out there on the leading edge and bleeding edge of publishing, where new technology can be used to

Why did success smile upon us?

One of the key answers may be that the staff loved and headed the communication/technology revolution that was being documented in the paper.

15

our advantage

Throughout TCP's early years, desktop publishing tools actually altered the facts that prepared information to go "in the press." Part of our advantage was



that we were early adapters of those products. We walked our "prize," as it were. Whereas in 1981 I could not find a career counselor in Toronto who knew what desktop publishing was, by 1989

DTP was becoming mainstream. For the TCP staff, the consequence of early adoption was often having every company when we would integrate new products into our repertoire, a new technology would come along, forcing us to adapt to it.

We often stumbled. But like children learning to walk, we would always get up after a fall and try again. Through trial and error, we chose the tools that worked. Our difficult experiences became source material for numerous TCP articles. Sometimes our readers learned of the rough terrain out on the horizon after we had recovered from some production nightmare.

Popular fascination with the whole gamut of emerging computer technology grew geometrically during those years. We were fortunate at TCP to have staff for tasks other than presswork who also loved learning the ways of the new tools. For example, our sales staff

Continued on page 54



CRYSTAL COMPUTER LTD

4851A KINGSTON RD. UNIT 207
TOR. (416) 491-3300 FAX (416) 491-3300
email: info@crystalcomputer.ca

STANDARD PC		STANDARD PC		STANDARD PC	
Model	Price	Model	Price	Model	Price
486SX 333MHz	\$1,299	486SX 333MHz	\$1,299	486SX 333MHz	\$1,299
486SX 333MHz	\$1,299	486SX 333MHz	\$1,299	486SX 333MHz	\$1,299
486SX 333MHz	\$1,299	486SX 333MHz	\$1,299	486SX 333MHz	\$1,299

AMD-VALUE

486SX 333MHz

486SX 333MHz

486SX 333MHz

INTEL-VALUE

486SX 333MHz

486SX 333MHz

486SX 333MHz

P4-VALUE

486SX 333MHz

486SX 333MHz

486SX 333MHz

AMD-POWER

486SX 333MHz

486SX 333MHz

486SX 333MHz

INTEL-POWER

486SX 333MHz

486SX 333MHz

486SX 333MHz

P4-POWER

486SX 333MHz

486SX 333MHz

486SX 333MHz

LEADING AVAILABLE More than 1000 systems and upgrades at special prices. 2% Savings on P.C., 3% on Peripherals, 4% on A.C.

Frontier Cool Winter Savings...Buy Now and Save Money!

 ACER 17" LCD 1700S 17" Monitor \$649 Three Year Warranty <small>Free Shipping</small>	 Hansol 1700 17" Flat Monitor \$329 Three Year Warranty <small>Free Shipping</small>	 Hansol 1715 17" Flat Monitor \$469 Three Year Warranty <small>Free Shipping</small>	 Hansol 1715 17" Flat Monitor \$199 Three Year Warranty <small>Free Shipping</small>	 COMPAQ 1700 17" Monitor \$159 Three Year Warranty <small>Free Shipping</small>	 Hansol 17" K5 17" LCD Monitor \$679 Three Year Warranty <small>Free Shipping</small>	 Hansol 17" 17" LCD Monitor \$599 Three Year Warranty <small>Free Shipping</small>	 Hansol 15" 15" LCD Monitor \$369 Three Year Warranty <small>Free Shipping</small>
 Open 17" LCD 17" Monitor \$178 Retail Box	 LITEON 17" LCD 17" Monitor \$89 Retail Box	 Open 17" LCD 17" Monitor \$79 Retail Box	 Open 17" LCD 17" Monitor \$85 OEM	 Pioneer DVD Recorder \$435 Retail Box	 SONY DVD Recorder \$549 Retail Box	 SONY DVD Recorder \$69 Retail Box	 SONY DVD Recorder \$239 Retail Box
 Maxtor 40/80 GB 1300rpm 1.8" Hard Drive \$139/169 Retail Box	 Seagate 40/80 GB 7200rpm 3.5" Hard Drive \$165/185 Retail Box	 Western Digital 80 GB 7200rpm 3.5" Hard Drive \$179 Retail Box	 MSI GeForce 4000 128MB AGP 8x PCI TV Out \$109 Retail Box	 Pioneer 1000 Pro 128MB AGP 8x PCI TV Out \$179 Retail Box	 Pioneer 1000 Pro 128MB AGP 8x PCI TV Out \$379 Retail Box	 Pioneer 1000 Pro 128MB AGP 8x PCI TV Out \$599 Retail Box	 Pioneer 1000 Pro 128MB AGP 8x PCI TV Out \$679 Retail Box
 Open 17" LCD 17" Monitor \$85 Retail Box	 Open 17" LCD 17" Monitor \$69 Retail Box	 Open 17" LCD 17" Monitor \$65 Retail Box	 Open 17" LCD 17" Monitor \$69 Retail Box	 Open 17" LCD 17" Monitor \$169 Retail Box	 Open 17" LCD 17" Monitor \$256 Retail Box	 Open 17" LCD 17" Monitor \$219 Retail Box	 Open 17" LCD 17" Monitor \$185 Retail Box
 A-MTECH 17" LCD 17" Monitor \$339 Retail Box	 ALTEC 17" LCD 17" Monitor \$185 Retail Box	 ALTEC 17" LCD 17" Monitor \$85 Retail Box	 ALTEC 17" LCD 17" Monitor \$119 Retail Box	 ALTEC 17" LCD 17" Monitor \$65 Retail Box	 ALTEC 17" LCD 17" Monitor \$39 Retail Box	 ALTEC 17" LCD 17" Monitor \$79 Retail Box	 ALTEC 17" LCD 17" Monitor \$79 Retail Box

Value System

\$499



AMD Duron 1.3GHz
256MB, 30GB HDD
48x24x48 CDRW
Onboard: Video, Sound
& 10/100 Network.
1.44 FDD & Mini-Tower Case
Keyboard/Mouse/Speakers
17" Monitor and 250W

Office System

\$649



Intel Celeron 1.8GHz
256MB, 30GB HDD
48x24x48 CDRW
ATI Radeon 7000 32MB
Onboard: Sound/Network
1.44 FDD & Mid-Tower Case
Keyboard/Mouse/Speakers
17" Monitor and 250W

Home System

\$699



AMD XP 2000
256MB, 30GB HDD
48x24x48 CDRW
GeForce MX400 64MB
Onboard: Sound/Network
1.44 FDD & Mid-Tower Case
Keyboard/Mouse/Speakers
17" Monitor and 250W

Power System

\$749



Intel Pentium 4 2.0GHz
256MB, 30GB HDD
48x24x48 CDRW
Onboard: Video, Sound
& 10/100 Network.
1.44 FDD & Mid-Tower Case
Keyboard/Mouse/Speakers
17" Monitor and 250W

On Our Website: \$499 Desktop System & Online Auction: Parts From \$1

VANCOUVER

Phone: (604) 739-8060

Toll Free: 1-888-675-4222

105-1705 West Broadway

Email: sales_vancouver@frontierpc.com

www.frontierpc.com

Frontier Computer

LIMITED STOCK ON SOME ITEMS

BURNABY

Phone: (604) 434-3800

Toll Free: 1-877-434-3300

60 - 6990 Kingsway

Email: sales_burnaby@frontierpc.com

ROCK COMPUTER

Store Hours:

Mon - Fri 9:30 - 6:30

Sat. 9:30 - 6:00

#150 - 5172 Kingway
Burnaby, B. C.

Fax: (604) 419-8888

Tel: (604) 419-8828

Tech: (604) 879-8640



Keyboard

Rock Model #1 Keyboard
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this keyboard is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this keyboard is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this keyboard is \$179.95

Mouse

Rock Model #1 Mouse
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this mouse is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this mouse is \$179.95

H.D. Floppy

Rock Model #1 Floppy
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this floppy is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this floppy is \$179.95

Speakers/Microphone

Rock Model #1 Speakers
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this speakers is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this speakers is \$179.95

Mainframe

Rock Model #1 Mainframe
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this mainframe is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this mainframe is \$179.95

Hard Drive (H.D.)

Rock Model #1 Hard Drive
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this hard drive is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this hard drive is \$179.95

Hard Drive (H.D.)

Rock Model #1 Hard Drive
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this hard drive is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this hard drive is \$179.95

Notebook

Rock Model #1 Notebook
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this notebook is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this notebook is \$179.95

Video Card

Rock Model #1 Video Card
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this video card is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this video card is \$179.95

Sound Card

Rock Model #1 Sound Card
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this sound card is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this sound card is \$179.95

Controller

Rock Model #1 Controller
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this controller is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this controller is \$179.95

Modem Card

Rock Model #1 Modem Card
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this modem card is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this modem card is \$179.95

Monitor

Rock Model #1 Monitor
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this monitor is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this monitor is \$179.95

Printer

Rock Model #1 Printer
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this printer is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this printer is \$179.95

Scanner

Rock Model #1 Scanner
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this scanner is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this scanner is \$179.95

Fax Modem

Rock Model #1 Fax Modem
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this fax modem is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this fax modem is \$179.95

DVD

Rock Model #1 DVD
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this DVD is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this DVD is \$179.95

CD-ROM

Rock Model #1 CD-ROM
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this CD-ROM is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this CD-ROM is \$179.95

Sound Card

Rock Model #1 Sound Card
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this sound card is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this sound card is \$179.95

Controller

Rock Model #1 Controller
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this controller is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this controller is \$179.95

Modem Card

Rock Model #1 Modem Card
Full size, 104 keys, 100% mechanical
Price \$179.95 MSRP \$199.95
Suggested retail for this modem card is \$179.95
Full size, 104 keys, 100% mechanical
Suggested retail for this modem card is \$179.95

Granite System

AMD K5 Duron 1.50G CPU & Fan
ATI K100M 512MB SVT3000 32MB
12MB PCI33 300RAM
Parallel 1.44MB 3.1" Floppy Drive
30 GB ATA 133 7200rpm 7200MB Hard Drive
Integrated 32MB 5557044V Power Supply
17" Tower Case with P-300W Power Supply
Wired PS/2 Keyboard
PS/2 P3.0 Mouse
16GB 30 Integrated Sound
IDE 16MB EIDE CD-ROM Drive
Jumper 871 Stereo Speakers
Integrated 10/100 Data Network
Full Warranty

\$389

Ruby System

Intel Celeron 1.20Ghz Socket 478 CPU & Fan
Pentium III 128MB 32MB
12MB PCI33 300RAM
Parallel 1.44MB 3.1" Floppy Drive
30 GB ATA 133 7200rpm 7200MB Hard Drive
Integrated 32MB 5557044V Power Supply
17" Tower Case with P-300W Power Supply
Wired PS/2 Keyboard
PS/2 P3.0 Mouse
16GB 30 Integrated Sound
IDE 16MB EIDE CD-ROM Drive
Jumper 871 Stereo Speakers
Integrated 10/100 Data Network
Full Warranty

\$466

Emerald System

AMD Athlon 2000 Socket A CPU & Fan
ATI K100M 512MB SVT3000 32MB
12MB PCI33 300RAM
Parallel 1.44MB 3.1" Floppy Drive
30 GB ATA 133 7200rpm 7200MB Hard Drive
Integrated 32MB 5557044V Power Supply
17" Tower Case with P-300W Power Supply
Wired PS/2 Keyboard
PS/2 P3.0 Mouse
16GB 30 Integrated Sound
IDE 16MB EIDE CD-ROM Drive
Jumper 871 Stereo Speakers
Integrated 10/100 Data Network
Full Warranty

\$636

Diamond System

Intel Pentium 4 3060 Socket 478 CPU & Fan
ATI K100M 512MB SVT3000 32MB
12MB PCI33 300RAM
Parallel 1.44MB 3.1" Floppy Drive
30 GB ATA 133 7200rpm 7200MB Hard Drive
Integrated 32MB 5557044V Power Supply
17" Tower Case with P-300W Power Supply
Wired PS/2 Keyboard
PS/2 P3.0 Mouse
16GB 30 Integrated Sound
IDE 16MB EIDE CD-ROM Drive
Jumper 871 Stereo Speakers
Integrated 10/100 Data Network
Full Warranty

\$856

Christmas Special

Intel Pentium 4 3060 Socket 478 CPU & Fan
ATI K100M 512MB SVT3000 32MB
12MB PCI33 300RAM
Parallel 1.44MB 3.1" Floppy Drive
30 GB ATA 133 7200rpm 7200MB Hard Drive
Integrated 32MB 5557044V Power Supply
17" Tower Case with P-300W Power Supply
Wired PS/2 Keyboard
PS/2 P3.0 Mouse
16GB 30 Integrated Sound
IDE 16MB EIDE CD-ROM Drive
Jumper 871 Stereo Speakers
Integrated 10/100 Data Network
Full Warranty

\$1066

J&L MULTIMEDIA

Tel: (904) 263-2377 486 Kingsway, Vancouver
(804) 758-2176 B.C., Canada V5T 3J9
Tel Fax: 1-877-946-8650

Welcomes Purchasing Orders Around The World!!!

Web Site: www.jandl.com
E-Mail: jandl@jandl.com
Fax: (904) 758-2176

Monday - Saturday
9:30-5:30 am - 4:30-8:30 pm

- Match Price
- Global Services
- Great Sales team
- Special Orders
- Quick Shipping
- World Wide Services

The Computer Paper hits Hogtown

By Jeff Enns

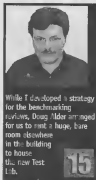
The first time I met TCP's Doug Alder was in 1993, when a very tall man wearing a turban and white robes walked into the digital imaging department at my wife Val and I ran in Concord, Ont. Unlike our typical window desktop publishing customers, Doug—or Karan Singh Khalsa as we knew him then—was very knowledgeable about both PostScript output and typesetting and page layout using personal computers.

He was very calm and soft spoken, unobtrusively courteous, and patient. He struck me as very smart, and ethical, and one of what he wanted. I only knew a little about The Computer Paper. I'd seen a few copies of the Vancouver edition in the early '90s and was quite impressed. When a Toronto edition of TCP first began to appear throughout the Metro area it was obvious that it was going to be an ideal candidate for the Toronto computer publishing market.

Unlike the long established, usually black and white Toronto *Compost*, which I had occasionally written for, TCP regularly had striking full-colour covers, often employing 3D or vector art generated by programs such as Adobe Illustrator, or digitally manipulated photo illustrations created with Photoshop. The Vancouver-based TCP covered was very tech savvy, and willing to push the digital imaging envelope a bit further each time a new desktop publishing tool became available.

The editorial content was also very good, with a stable of West Coast writers, such as Graham Bennett, who were at least as technically adept as any Hogtown counterpart. Very quickly, *Topcon Computer* and *The Computer Paper* were basically competing for the rich Toronto market, locked in a battle to the death for ad revenues and readers. It was great.

TCP Test Lab is born
In mid-1993, I started TCP's new, busy, new Toronto ad sales office, in a renovated



While I developed a strategy for the benchmarking reviews, Doug Alder arranged for us to rent a huge, bare room elsewhere in the building to house the new Test Lab.

ed factory building in the rundown industrial lands of West Toronto and got a couple of freelance writing assignments, reviewing computer software and games hardware.

For the next year, though, I was scammed in my own publication, as editor of *Computing Now!*, a glossy Canadian computer magazine I edited from late 1993 to 1994. When the publishing company went into receivership, I phoned Doug to ask if he had any advice or leads on technology writing or editing work. He paused for a moment then asked, "How would you like to start a Test Lab in the Toronto office, and be the technical editor?" I told him I'd be happy to give it a go.

On returning to *The Computer Paper's* Toronto office a year after my first visit, I felt as though a revolution had taken place while I was away. The tiny sales office had been replaced by a much larger editorial, production, and ad sales machine, which was crisscrossed by the gals with both *The Computer Paper's*

Continued on page 54

Application	ONLY \$19.95	ONLY \$24.95	ONLY \$79.95
Adobe Acrobat 4.0	19.95	24.95	79.95
Adobe Acrobat 5.0	19.95	24.95	79.95
Adobe Acrobat 6.0	19.95	24.95	79.95
Adobe Acrobat 7.0	19.95	24.95	79.95
Adobe Acrobat 8.0	19.95	24.95	79.95
Adobe Acrobat 9.0	19.95	24.95	79.95
Adobe Acrobat 10.0	19.95	24.95	79.95
Adobe Acrobat 11.0	19.95	24.95	79.95
Adobe Acrobat 12.0	19.95	24.95	79.95
Adobe Acrobat 13.0	19.95	24.95	79.95
Adobe Acrobat 14.0	19.95	24.95	79.95
Adobe Acrobat 15.0	19.95	24.95	79.95
Adobe Acrobat 16.0	19.95	24.95	79.95
Adobe Acrobat 17.0	19.95	24.95	79.95
Adobe Acrobat 18.0	19.95	24.95	79.95
Adobe Acrobat 19.0	19.95	24.95	79.95
Adobe Acrobat 20.0	19.95	24.95	79.95
Adobe Acrobat 21.0	19.95	24.95	79.95
Adobe Acrobat 22.0	19.95	24.95	79.95
Adobe Acrobat 23.0	19.95	24.95	79.95
Adobe Acrobat 24.0	19.95	24.95	79.95
Adobe Acrobat 25.0	19.95	24.95	79.95
Adobe Acrobat 26.0	19.95	24.95	79.95
Adobe Acrobat 27.0	19.95	24.95	79.95
Adobe Acrobat 28.0	19.95	24.95	79.95
Adobe Acrobat 29.0	19.95	24.95	79.95
Adobe Acrobat 30.0	19.95	24.95	79.95
Adobe Acrobat 31.0	19.95	24.95	79.95
Adobe Acrobat 32.0	19.95	24.95	79.95
Adobe Acrobat 33.0	19.95	24.95	79.95
Adobe Acrobat 34.0	19.95	24.95	79.95
Adobe Acrobat 35.0	19.95	24.95	79.95
Adobe Acrobat 36.0	19.95	24.95	79.95
Adobe Acrobat 37.0	19.95	24.95	79.95
Adobe Acrobat 38.0	19.95	24.95	79.95
Adobe Acrobat 39.0	19.95	24.95	79.95
Adobe Acrobat 40.0	19.95	24.95	79.95
Adobe Acrobat 41.0	19.95	24.95	79.95
Adobe Acrobat 42.0	19.95	24.95	79.95
Adobe Acrobat 43.0	19.95	24.95	79.95
Adobe Acrobat 44.0	19.95	24.95	79.95
Adobe Acrobat 45.0	19.95	24.95	79.95
Adobe Acrobat 46.0	19.95	24.95	79.95
Adobe Acrobat 47.0	19.95	24.95	79.95
Adobe Acrobat 48.0	19.95	24.95	79.95
Adobe Acrobat 49.0	19.95	24.95	79.95
Adobe Acrobat 50.0	19.95	24.95	79.95
Adobe Acrobat 51.0	19.95	24.95	79.95
Adobe Acrobat 52.0	19.95	24.95	79.95
Adobe Acrobat 53.0	19.95	24.95	79.95
Adobe Acrobat 54.0	19.95	24.95	79.95
Adobe Acrobat 55.0	19.95	24.95	79.95
Adobe Acrobat 56.0	19.95	24.95	79.95
Adobe Acrobat 57.0	19.95	24.95	79.95
Adobe Acrobat 58.0	19.95	24.95	79.95
Adobe Acrobat 59.0	19.95	24.95	79.95
Adobe Acrobat 60.0	19.95	24.95	79.95
Adobe Acrobat 61.0	19.95	24.95	79.95
Adobe Acrobat 62.0	19.95	24.95	79.95
Adobe Acrobat 63.0	19.95	24.95	79.95
Adobe Acrobat 64.0	19.95	24.95	79.95
Adobe Acrobat 65.0	19.95	24.95	79.95
Adobe Acrobat 66.0	19.95	24.95	79.95
Adobe Acrobat 67.0	19.95	24.95	79.95
Adobe Acrobat 68.0	19.95	24.95	79.95
Adobe Acrobat 69.0	19.95	24.95	79.95
Adobe Acrobat 70.0	19.95	24.95	79.95
Adobe Acrobat 71.0	19.95	24.95	79.95
Adobe Acrobat 72.0	19.95	24.95	79.95
Adobe Acrobat 73.0	19.95	24.95	79.95
Adobe Acrobat 74.0	19.95	24.95	79.95
Adobe Acrobat 75.0	19.95	24.95	79.95
Adobe Acrobat 76.0	19.95	24.95	79.95
Adobe Acrobat 77.0	19.95	24.95	79.95
Adobe Acrobat 78.0	19.95	24.95	79.95
Adobe Acrobat 79.0	19.95	24.95	79.95
Adobe Acrobat 80.0	19.95	24.95	79.95
Adobe Acrobat 81.0	19.95	24.95	79.95
Adobe Acrobat 82.0	19.95	24.95	79.95
Adobe Acrobat 83.0	19.95	24.95	79.95
Adobe Acrobat 84.0	19.95	24.95	79.95
Adobe Acrobat 85.0	19.95	24.95	79.95
Adobe Acrobat 86.0	19.95	24.95	79.95
Adobe Acrobat 87.0	19.95	24.95	79.95
Adobe Acrobat 88.0	19.95	24.95	79.95
Adobe Acrobat 89.0	19.95	24.95	79.95
Adobe Acrobat 90.0	19.95	24.95	79.95
Adobe Acrobat 91.0	19.95	24.95	79.95
Adobe Acrobat 92.0	19.95	24.95	79.95
Adobe Acrobat 93.0	19.95	24.95	79.95
Adobe Acrobat 94.0	19.95	24.95	79.95
Adobe Acrobat 95.0	19.95	24.95	79.95
Adobe Acrobat 96.0	19.95	24.95	79.95
Adobe Acrobat 97.0	19.95	24.95	79.95
Adobe Acrobat 98.0	19.95	24.95	79.95
Adobe Acrobat 99.0	19.95	24.95	79.95
Adobe Acrobat 100.0	19.95	24.95	79.95
Adobe Acrobat 101.0	19.95	24.95	79.95
Adobe Acrobat 102.0	19.95	24.95	79.95
Adobe Acrobat 103.0	19.95	24.95	79.95
Adobe Acrobat 104.0	19.95	24.95	79.95
Adobe Acrobat 105.0	19.95	24.95	79.95
Adobe Acrobat 106.0	19.95	24.95	79.95
Adobe Acrobat 107.0	19.95	24.95	79.95
Adobe Acrobat 108.0	19.95	24.95	79.95
Adobe Acrobat 109.0	19.95	24.95	79.95
Adobe Acrobat 110.0	19.95	24.95	79.95
Adobe Acrobat 111.0	19.95	24.95	79.95
Adobe Acrobat 112.0	19.95	24.95	79.95
Adobe Acrobat 113.0	19.95	24.95	79.95
Adobe Acrobat 114.0	19.95	24.95	79.95
Adobe Acrobat 115.0	19.95	24.95	79.95
Adobe Acrobat 116.0	19.95	24.95	79.95
Adobe Acrobat 117.0	19.95	24.95	79.95
Adobe Acrobat 118.0	19.95	24.95	79.95
Adobe Acrobat 119.0	19.95	24.95	79.95
Adobe Acrobat 120.0	19.95	24.95	79.95
Adobe Acrobat 121.0	19.95	24.95	79.95
Adobe Acrobat 122.0	19.95	24.95	79.95
Adobe Acrobat 123.0	19.95	24.95	79.95
Adobe Acrobat 124.0	19.95	24.95	79.95
Adobe Acrobat 125.0	19.95	24.95	79.95
Adobe Acrobat 126.0	19.95	24.95	79.95
Adobe Acrobat 127.0	19.95	24.95	79.95
Adobe Acrobat 128.0	19.95	24.95	79.95
Adobe Acrobat 129.0	19.95	24.95	79.95
Adobe Acrobat 130.0	19.95	24.95	79.95
Adobe Acrobat 131.0	19.95	24.95	79.95
Adobe Acrobat 132.0	19.95	24.95	79.95
Adobe Acrobat 133.0	19.95	24.95	79.95
Adobe Acrobat 134.0	19.95	24.95	79.95
Adobe Acrobat 135.0	19.95	24.95	79.95
Adobe Acrobat 136.0	19.95	24.95	79.95
Adobe Acrobat 137.0	19.95	24.95	79.95
Adobe Acrobat 138.0	19.95	24.95	79.95
Adobe Acrobat 139.0	19.95	24.95	79.95
Adobe Acrobat 140.0	19.95	24.95	79.95
Adobe Acrobat 141.0	19.95	24.95	79.95
Adobe Acrobat 142.0	19.95	24.95	79.95
Adobe Acrobat 143.0	19.95	24.95	79.95
Adobe Acrobat 144.0	19.95	24.95	79.95
Adobe Acrobat 145.0	19.95	24.95	79.95
Adobe Acrobat 146.0	19.95	24.95	79.95
Adobe Acrobat 147.0	19.95	24.95	79.95
Adobe Acrobat 148.0	19.95	24.95	79.95
Adobe Acrobat 149.0	19.95	24.95	79.95
Adobe Acrobat 150.0	19.95	24.95	79.95
Adobe Acrobat 151.0	19.95	24.95	79.95
Adobe Acrobat 152.0	19.95	24.95	79.95
Adobe Acrobat 153.0	19.95	24.95	79.95
Adobe Acrobat 154.0	19.95	24.95	79.95
Adobe Acrobat 155.0	19.95	24.95	79.95
Adobe Acrobat 156.0	19.95	24.95	79.95
Adobe Acrobat 157.0	19.95	24.95	79.95
Adobe Acrobat 158.0	19.95	24.95	79.95
Adobe Acrobat 159.0	19.95	24.95	79.95
Adobe Acrobat 160.0	19.95	24.95	79.95
Adobe Acrobat 161.0	19.95	24.95	79.95
Adobe Acrobat 162.0	19.95	24.95	79.95
Adobe Acrobat 163.0	19.95	24.95	79.95
Adobe Acrobat 164.0	19.95	24.95	79.95
Adobe Acrobat 165.0	19.95	24.95	79.95
Adobe Acrobat 166.0	19.95	24.95	79.95
Adobe Acrobat 167.0	19.95	24.95	79.95
Adobe Acrobat 168.0	19.95	24.95	79.95
Adobe Acrobat 169.0	19.95	24.95	79.95
Adobe Acrobat 170.0	19.95	24.95	79.95
Adobe Acrobat 171.0	19.95	24.95	79.95
Adobe Acrobat 172.0	19.95	24.95	79.95
Adobe Acrobat 173.0	19.95	24.95	79.95
Adobe Acrobat 174.0	19.95	24.95	79.95
Adobe Acrobat 175.0	19.95	24.95	79.95
Adobe Acrobat 176.0	19.95	24.95	79.95
Adobe Acrobat 177.0	19.95	24.95	79.95
Adobe Acrobat 178.0	19.95	24.95	79.95
Adobe Acrobat 179.0	19.95	24.95	79.95
Adobe Acrobat 180.0	19.95	24.95	79.95
Adobe Acrobat 181.0	19.95	24.95	79.95
Adobe Acrobat 182.0	19.95	24.95	79.95
Adobe Acrobat 183.0	19.95	24.95	79.95
Adobe Acrobat 184.0	19.95	24.95	79.95
Adobe Acrobat 185.0	19.95	24.95	79.95
Adobe Acrobat 186.0	19.95	24.95	79.95
Adobe Acrobat 187.0	19.95	24.95	79.95
Adobe Acrobat 188.0	19.95	24.95	79.95
Adobe Acrobat 189.0	19.95	24.95	79.95
Adobe Acrobat 190.0	19.95	24.95	79.95
Adobe Acrobat 191.0	19.95	24.95	79.95
Adobe Acrobat 192.0	19.95	24.95	79.95
Adobe Acrobat 193.0	19.95	24.95	79.95
Adobe Acrobat 194.0	19.95	24.95	79.95
Adobe Acrobat 195.0	19.95	24.95	79.95
Adobe Acrobat 196.0	19.95	24.95	79.95
Adobe Acrobat 197.0	19.95	24.95	79.95
Adobe Acrobat 198.0	19.95	24.95	79.95
Adobe Acrobat 199.0	19.95	24.95	79.95
Adobe Acrobat 200.0	19.95	24.95	79.95

Long lookers

TCP Lab observes the world through digicams with 5X or greater zooms

By David Tanaka

There's nothing like a telephone lens to bring the action in close, but most digital cameras today have just 3X zooms—what's a chance to do?

In our search for an answer, TCP Lab came up with seven digital cameras with big telephoto lenses. We asked product manufacturers to send us any model that had a fixed lens with at least a 5X optical zoom range. We received three, four and five megapixel models with optical zooms ranging from 5X to 16X, with street prices between \$700 and \$2,000. Maximum telephoto for the group ranges from 190 mm to 780 mm (using 35 mm film camera equivalents). That magnifies subjects from four to eight times compared to what you would see with your unaided eyes.

Depth of the field

You can act as any of three cameras on automatic and expect to take very good pictures—the built-in auto exposure and focusing systems are quite capable of making intelligent decisions in that



rigid. But some in this group will give you as much freedom over their picture as you want. The Fujifilm FinePix 5612Z, Minolta DiMAGE 7Hi, Nikon CoolPix 5700, and Sony CyberShot DSC-E717 are the owners of their respective makers' consistency crop, and are more or less competing for the same customer: the advanced amateur or someone who seriously pursues photog-

raphy as a hobby. These are precision instruments that a filter the user control over virtually every aspect of picture taking.

The Panafix, DiMAGE, and CoolPix are the best to sport the backdrop of film photographers in their transition to digital. They are fast and fearless cameras, with controls and actions marked in the language of photography for the most

part, albeit with a ton of electronics between the eyepiece and the shutter.

Seen on the other hand, takes a different view on how to serve a digital photographer in the 21st century. The DSC E717 is a capable camera in the track record sense, but also has a number of unique features. Camera traditionalists would probably scoff at some of these, but they extend photography beyond a medium for the photo enthusiast, and into a broader utility for daily living. For example, the Multi Burst mode allows you, with a single shutter click, to capture a sequence of 16 shots within a single frame—time slows of your golf swing, for example.

The Fujifilm S2800 and Hewlett-Packard P850 are at the point-and-shoot end of things. They offer users the ability to override some of the automatic settings, but neither offers a fully manual mode. However, both offer generally accurate automatic exposure systems that should ease the user from having to think about f-stops and shutter speeds, which is precisely what they should do, given their target uses.

Continued on page 44

TCP Lab: Big zooms all, but otherwise a varied lot

None of the cameras in this lab report should be considered pocket cameras (some will fit in an overcoat pocket if you don't mind the bulge) because even the smallest of the lot—the FinePix 3800, Camera C730, and CoolPix 5700—from a bicyclist's perspective, these models show quite a spread in design, with considerable variation in size, ergonomics, user interface, and price.

The Fujifilm S2800 and Hewlett-Packard P850 emphasize point-and-shoot simplicity, but the others have a lot of individual buttons and knobs. So, if you're new to digital cameras or a specific brand, you'll want to study the manual to learn which button or knob does what.

And if you are coming from another brand, you may be in for some serious relearning, as these do not seem to be any agreement on a common way to implement controls, other than the shutter-release button.

Nikon and Fujifilm also use a non-stan-

dard USB port, so if you damage or lose your cable, you won't be able to go down to the local office supply store and pick up a standard mini-USB cable.

Here are highlights of other commonalities and differences:

- All have an asymmetrical layout: lens at the outer edge of one side of the body and handling at the other.
- All have pop-up flashes and rear-mounted LCDs for composing/reviewing.
- All will record video clips. The Fujifilm S602 is unusual in that it can record 640x480 pixels at 30 frames per second up to the storage capacity of the card (about 15 minutes on a 1 GB micro-drive). The others are more limited.
- All use an electronic viewfinder (EVF), which is produced as a small LCD that you look at through an eyepiece, like a video camcorder. The image differs from what you get with the ground glass screen of a 35 mm single-lens reflex

camera. It can be problematic in some situations, and on some cameras the image appears cornered than on others.

- Those have articulated viewfinders that allow you to compose a shot from an angle other than eye level (say, if you want a worm's-eye view). The Nikon has a swivel-style LCD, the Minolta has a camcorder-style flip-up eyepiece, and the Sony's body pivots independently of the lens.
- Minolta DiMAGE is the only model with a manual zoom, which you control by turning a ring on the lens barrel—just as you would on a 35 mm SLR.
- DiMAGE, Sony, and Fujifilm S602 have manual focusing rings on the lens barrel in case you want to override the auto focus.
- Olympus, Minolta, and Sony implement a real-time livebuena technology as an exposure aid. When activated, it shows up as a small window in the viewfinder or LCD display, showing you the distri-

bution of dark and light values.

- Sony and Nikon use a proprietary Lithium Ion battery; the rest use four AA cells (nickel metal hydride recommended).
- Minolta S2800 and the Olympus Camera use the raw 10 Picture Card, but the Olympus—which has dual storage slots—also accepts SmartMedia cards.
- Minolta S602 also has dual slots, accommodating SmartMedia and CompactFlash (including 1 GB micro-drives).
- Nikon and Minolta models also accept microdrives, along with CF, SD, and SmartMedia in their CF/LVI card slot.
- HP model uses Secure Digital/MultiMediaCard storage media.
- Sony, as one would expect, uses the Sony-developed MemoryStick.
- Nikon and Minolta store images optionally in a raw format, which purists will appreciate.

—David Tanaka

Since 1997

Business Hours: Monday - Saturday 10am - 8:30pm

Tel: (604) 214-9316, 214-9326 Fax: 214-9377

The Pioneer

AMD Duron 1.0 System - \$379
 Animate Masterboard with ASP Set
 12MB PC133 SDRAM
 Integrated 25MB Video
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

Migrate to

Duron 1.3G \$395
 XP1700 \$425
 XP1000 \$440
 XP7000 \$490
 XP1200 \$450

New Year Special

Moritz AllVirus 2003... \$25
 Layback Optical Wheel Mouse USB... \$16
 Voice Activated Cold Calling Neon Light (GPR)... \$16
 Color LMP Case Fan (Red / Red) Green... \$12
 LG 482400 CDROM Burn Drive w/ EDDO Caddy... \$75

Monthly Special

AMD DR1400... \$369
 512MB 200000 Hard Drive
 Integrated Duron CPU Video, Audio, LAN
 12MB PC133 SDRAM
 Integrated 3000000 Hard Drive
 LG 482400 CDROM Burn Drive
 Integrated 1.44MB FDD
 Windows XP3 Keyboard
 100K 3000 700000 Hard Drive

All systems are backed with 3 years labour & 1 year parts limited warranty. Virus one month free internet.

Home Office

P4 Celeron 1.7G - \$416
P4 Celeron 1.8G \$434
 Pentium 4 Motherboard
 12MB PC133 SDRAM
 Integrated AGP Video
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

K7 Master

AMD XP1700 - \$499
 AMD Athlon Motherboard
 AMD 512MB SDRAM (DDR Synchronous)
 5MB GeForce MX400 Video Card
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

P4 Partner

Pentium 4 1.7G - \$585
 P4 1.7G CPU
 512MB SDRAM
 5MB GeForce MX400 Video Card
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

P4 Commander

Pentium 4 2.6G - \$779
 P4 2.6G CPU
 512MB SDRAM
 5MB GeForce MX400 Video Card
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

Play Center

AMD XP1700 - \$675
 XP1700 CPU
 512MB SDRAM
 5MB GeForce MX400 Video Card
 Integrated 35 Sound
 Integrated 10/100 LAN
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive
 100K 3000 700000 Hard Drive

CPU

AMD Duron 1.1G / 1.2G / 1.3G... \$139 / \$149 / \$159
 AMD Duron 1.4G / 1.5G / 1.6G... \$169 / \$179 / \$189
 AMD Duron 1.7G / 1.8G / 1.9G... \$199 / \$209 / \$219
 AMD Duron 2.0G / 2.1G / 2.2G... \$229 / \$239 / \$249
 AMD Duron 2.4G / 2.6G / 2.8G... \$279 / \$289 / \$299
 AMD Duron 3.0G / 3.2G / 3.4G... \$329 / \$339 / \$349
 AMD Duron 3.6G / 3.8G / 4.0G... \$379 / \$389 / \$399
 AMD Duron 4.0G / 4.2G / 4.4G... \$429 / \$439 / \$449
 AMD Duron 4.6G / 4.8G / 5.0G... \$479 / \$489 / \$499
 AMD Duron 5.2G / 5.4G / 5.6G... \$529 / \$539 / \$549
 AMD Duron 5.8G / 6.0G / 6.2G... \$579 / \$589 / \$599
 AMD Duron 6.4G / 6.6G / 6.8G... \$629 / \$639 / \$649
 AMD Duron 7.0G / 7.2G / 7.4G... \$679 / \$689 / \$699
 AMD Duron 7.6G / 7.8G / 8.0G... \$729 / \$739 / \$749
 AMD Duron 8.2G / 8.4G / 8.6G... \$779 / \$789 / \$799
 AMD Duron 8.8G / 9.0G / 9.2G... \$829 / \$839 / \$849
 AMD Duron 9.4G / 9.6G / 9.8G... \$879 / \$889 / \$899
 AMD Duron 10.0G / 10.2G / 10.4G... \$929 / \$939 / \$949
 AMD Duron 10.6G / 10.8G / 11.0G... \$979 / \$989 / \$999
 AMD Duron 11.2G / 11.4G / 11.6G... \$1029 / \$1039 / \$1049
 AMD Duron 11.8G / 12.0G / 12.2G... \$1079 / \$1089 / \$1099
 AMD Duron 12.4G / 12.6G / 12.8G... \$1129 / \$1139 / \$1149
 AMD Duron 13.0G / 13.2G / 13.4G... \$1179 / \$1189 / \$1199
 AMD Duron 13.6G / 13.8G / 14.0G... \$1229 / \$1239 / \$1249
 AMD Duron 14.2G / 14.4G / 14.6G... \$1279 / \$1289 / \$1299
 AMD Duron 14.8G / 15.0G / 15.2G... \$1329 / \$1339 / \$1349
 AMD Duron 15.4G / 15.6G / 15.8G... \$1379 / \$1389 / \$1399
 AMD Duron 16.0G / 16.2G / 16.4G... \$1429 / \$1439 / \$1449
 AMD Duron 16.6G / 16.8G / 17.0G... \$1479 / \$1489 / \$1499
 AMD Duron 17.2G / 17.4G / 17.6G... \$1529 / \$1539 / \$1549
 AMD Duron 17.8G / 18.0G / 18.2G... \$1579 / \$1589 / \$1599
 AMD Duron 18.4G / 18.6G / 18.8G... \$1629 / \$1639 / \$1649
 AMD Duron 19.0G / 19.2G / 19.4G... \$1679 / \$1689 / \$1699
 AMD Duron 19.6G / 19.8G / 20.0G... \$1729 / \$1739 / \$1749
 AMD Duron 20.2G / 20.4G / 20.6G... \$1779 / \$1789 / \$1799
 AMD Duron 20.8G / 21.0G / 21.2G... \$1829 / \$1839 / \$1849
 AMD Duron 21.4G / 21.6G / 21.8G... \$1879 / \$1889 / \$1899
 AMD Duron 22.0G / 22.2G / 22.4G... \$1929 / \$1939 / \$1949
 AMD Duron 22.6G / 22.8G / 23.0G... \$1979 / \$1989 / \$1999
 AMD Duron 23.2G / 23.4G / 23.6G... \$2029 / \$2039 / \$2049
 AMD Duron 23.8G / 24.0G / 24.2G... \$2079 / \$2089 / \$2099
 AMD Duron 24.4G / 24.6G / 24.8G... \$2129 / \$2139 / \$2149
 AMD Duron 25.0G / 25.2G / 25.4G... \$2179 / \$2189 / \$2199
 AMD Duron 25.6G / 25.8G / 26.0G... \$2229 / \$2239 / \$2249
 AMD Duron 26.2G / 26.4G / 26.6G... \$2279 / \$2289 / \$2299
 AMD Duron 26.8G / 27.0G / 27.2G... \$2329 / \$2339 / \$2349
 AMD Duron 27.4G / 27.6G / 27.8G... \$2379 / \$2389 / \$2399
 AMD Duron 28.0G / 28.2G / 28.4G... \$2429 / \$2439 / \$2449
 AMD Duron 28.6G / 28.8G / 29.0G... \$2479 / \$2489 / \$2499
 AMD Duron 29.2G / 29.4G / 29.6G... \$2529 / \$2539 / \$2549
 AMD Duron 29.8G / 30.0G / 30.2G... \$2579 / \$2589 / \$2599
 AMD Duron 30.4G / 30.6G / 30.8G... \$2629 / \$2639 / \$2649
 AMD Duron 31.0G / 31.2G / 31.4G... \$2679 / \$2689 / \$2699
 AMD Duron 31.6G / 31.8G / 32.0G... \$2729 / \$2739 / \$2749
 AMD Duron 32.2G / 32.4G / 32.6G... \$2779 / \$2789 / \$2799
 AMD Duron 32.8G / 33.0G / 33.2G... \$2829 / \$2839 / \$2849
 AMD Duron 33.4G / 33.6G / 33.8G... \$2879 / \$2889 / \$2899
 AMD Duron 34.0G / 34.2G / 34.4G... \$2929 / \$2939 / \$2949
 AMD Duron 34.6G / 34.8G / 35.0G... \$2979 / \$2989 / \$2999
 AMD Duron 35.2G / 35.4G / 35.6G... \$3029 / \$3039 / \$3049
 AMD Duron 35.8G / 36.0G / 36.2G... \$3079 / \$3089 / \$3099
 AMD Duron 36.4G / 36.6G / 36.8G... \$3129 / \$3139 / \$3149
 AMD Duron 37.0G / 37.2G / 37.4G... \$3179 / \$3189 / \$3199
 AMD Duron 37.6G / 37.8G / 38.0G... \$3229 / \$3239 / \$3249
 AMD Duron 38.2G / 38.4G / 38.6G... \$3279 / \$3289 / \$3299
 AMD Duron 38.8G / 39.0G / 39.2G... \$3329 / \$3339 / \$3349
 AMD Duron 39.4G / 39.6G / 39.8G... \$3379 / \$3389 / \$3399
 AMD Duron 40.0G / 40.2G / 40.4G... \$3429 / \$3439 / \$3449
 AMD Duron 40.6G / 40.8G / 41.0G... \$3479 / \$3489 / \$3499
 AMD Duron 41.2G / 41.4G / 41.6G... \$3529 / \$3539 / \$3549
 AMD Duron 41.8G / 42.0G / 42.2G... \$3579 / \$3589 / \$3599
 AMD Duron 42.4G / 42.6G / 42.8G... \$3629 / \$3639 / \$3649
 AMD Duron 43.0G / 43.2G / 43.4G... \$3679 / \$3689 / \$3699
 AMD Duron 43.6G / 43.8G / 44.0G... \$3729 / \$3739 / \$3749
 AMD Duron 44.2G / 44.4G / 44.6G... \$3779 / \$3789 / \$3799
 AMD Duron 44.8G / 45.0G / 45.2G... \$3829 / \$3839 / \$3849
 AMD Duron 45.4G / 45.6G / 45.8G... \$3879 / \$3889 / \$3899
 AMD Duron 46.0G / 46.2G / 46.4G... \$3929 / \$3939 / \$3949
 AMD Duron 46.6G / 46.8G / 47.0G... \$3979 / \$3989 / \$3999
 AMD Duron 47.2G / 47.4G / 47.6G... \$4029 / \$4039 / \$4049
 AMD Duron 47.8G / 48.0G / 48.2G... \$4079 / \$4089 / \$4099
 AMD Duron 48.4G / 48.6G / 48.8G... \$4129 / \$4139 / \$4149
 AMD Duron 49.0G / 49.2G / 49.4G... \$4179 / \$4189 / \$4199
 AMD Duron 49.6G / 49.8G / 50.0G... \$4229 / \$4239 / \$4249
 AMD Duron 50.2G / 50.4G / 50.6G... \$4279 / \$4289 / \$4299
 AMD Duron 50.8G / 51.0G / 51.2G... \$4329 / \$4339 / \$4349
 AMD Duron 51.4G / 51.6G / 51.8G... \$4379 / \$4389 / \$4399
 AMD Duron 52.0G / 52.2G / 52.4G... \$4429 / \$4439 / \$4449
 AMD Duron 52.6G / 52.8G / 53.0G... \$4479 / \$4489 / \$4499
 AMD Duron 53.2G / 53.4G / 53.6G... \$4529 / \$4539 / \$4549
 AMD Duron 53.8G / 54.0G / 54.2G... \$4579 / \$4589 / \$4599
 AMD Duron 54.4G / 54.6G / 54.8G... \$4629 / \$4639 / \$4649
 AMD Duron 55.0G / 55.2G / 55.4G... \$4679 / \$4689 / \$4699
 AMD Duron 55.6G / 55.8G / 56.0G... \$4729 / \$4739 / \$4749
 AMD Duron 56.2G / 56.4G / 56.6G... \$4779 / \$4789 / \$4799
 AMD Duron 56.8G / 57.0G / 57.2G... \$4829 / \$4839 / \$4849
 AMD Duron 57.4G / 57.6G / 57.8G... \$4879 / \$4889 / \$4899
 AMD Duron 58.0G / 58.2G / 58.4G... \$4929 / \$4939 / \$4949
 AMD Duron 58.6G / 58.8G / 59.0G... \$4979 / \$4989 / \$4999
 AMD Duron 59.2G / 59.4G / 59.6G... \$5029 / \$5039 / \$5049
 AMD Duron 59.8G / 60.0G / 60.2G... \$5079 / \$5089 / \$5099
 AMD Duron 60.4G / 60.6G / 60.8G... \$5129 / \$5139 / \$5149
 AMD Duron 61.0G / 61.2G / 61.4G... \$5179 / \$5189 / \$5199
 AMD Duron 61.6G / 61.8G / 62.0G... \$5229 / \$5239 / \$5249
 AMD Duron 62.2G / 62.4G / 62.6G... \$5279 / \$5289 / \$5299
 AMD Duron 62.8G / 63.0G / 63.2G... \$5329 / \$5339 / \$5349
 AMD Duron 63.4G / 63.6G / 63.8G... \$5379 / \$5389 / \$5399
 AMD Duron 64.0G / 64.2G / 64.4G... \$5429 / \$5439 / \$5449
 AMD Duron 64.6G / 64.8G / 65.0G... \$5479 / \$5489 / \$5499
 AMD Duron 65.2G / 65.4G / 65.6G... \$5529 / \$5539 / \$5549
 AMD Duron 65.8G / 66.0G / 66.2G... \$5579 / \$5589 / \$5599
 AMD Duron 66.4G / 66.6G / 66.8G... \$5629 / \$5639 / \$5649
 AMD Duron 67.0G / 67.2G / 67.4G... \$5679 / \$5689 / \$5699
 AMD Duron 67.6G / 67.8G / 68.0G... \$5729 / \$5739 / \$5749
 AMD Duron 68.2G / 68.4G / 68.6G... \$5779 / \$5789 / \$5799
 AMD Duron 68.8G / 69.0G / 69.2G... \$5829 / \$5839 / \$5849
 AMD Duron 69.4G / 69.6G / 69.8G... \$5879 / \$5889 / \$5899
 AMD Duron 70.0G / 70.2G / 70.4G... \$5929 / \$5939 / \$5949
 AMD Duron 70.6G / 70.8G / 71.0G... \$5979 / \$5989 / \$5999
 AMD Duron 71.2G / 71.4G / 71.6G... \$6029 / \$6039 / \$6049
 AMD Duron 71.8G / 72.0G / 72.2G... \$6079 / \$6089 / \$6099
 AMD Duron 72.4G / 72.6G / 72.8G... \$6129 / \$6139 / \$6149
 AMD Duron 73.0G / 73.2G / 73.4G... \$6179 / \$6189 / \$6199
 AMD Duron 73.6G / 73.8G / 74.0G... \$6229 / \$6239 / \$6249
 AMD Duron 74.2G / 74.4G / 74.6G... \$6279 / \$6289 / \$6299
 AMD Duron 74.8G / 75.0G / 75.2G... \$6329 / \$6339 / \$6349
 AMD Duron 75.4G / 75.6G / 75.8G... \$6379 / \$6389 / \$6399
 AMD Duron 76.0G / 76.2G / 76.4G... \$6429 / \$6439 / \$6449
 AMD Duron 76.6G / 76.8G / 77.0G... \$6479 / \$6489 / \$6499
 AMD Duron 77.2G / 77.4G / 77.6G... \$6529 / \$6539 / \$6549
 AMD Duron 77.8G / 78.0G / 78.2G... \$6579 / \$6589 / \$6599
 AMD Duron 78.4G / 78.6G / 78.8G... \$6629 / \$6639 / \$6649
 AMD Duron 79.0G / 79.2G / 79.4G... \$6679 / \$6689 / \$6699
 AMD Duron 79.6G / 79.8G / 80.0G... \$6729 / \$6739 / \$6749
 AMD Duron 80.2G / 80.4G / 80.6G... \$6779 / \$6789 / \$6799
 AMD Duron 80.8G / 81.0G / 81.2G... \$6829 / \$6839 / \$6849
 AMD Duron 81.4G / 81.6G / 81.8G... \$6879 / \$6889 / \$6899
 AMD Duron 82.0G / 82.2G / 82.4G... \$6929 / \$6939 / \$6949
 AMD Duron 82.6G / 82.8G / 83.0G... \$6979 / \$6989 / \$6999
 AMD Duron 83.2G / 83.4G / 83.6G... \$7029 / \$7039 / \$7049
 AMD Duron 83.8G / 84.0G / 84.2G... \$7079 / \$7089 / \$7099
 AMD Duron 84.4G / 84.6G / 84.8G... \$7129 / \$7139 / \$7149
 AMD Duron 85.0G / 85.2G / 85.4G... \$7179 / \$7189 / \$7199
 AMD Duron 85.6G / 85.8G / 86.0G... \$7229 / \$7239 / \$7249
 AMD Duron 86.2G / 86.4G / 86.6G... \$7279 / \$7289 / \$7299
 AMD Duron 86.8G / 87.0G / 87.2G... \$7329 / \$7339 / \$7349
 AMD Duron 87.4G / 87.6G / 87.8G... \$7379 / \$7389 / \$7399
 AMD Duron 88.0G / 88.2G / 88.4G... \$7429 / \$7439 / \$7449
 AMD Duron 88.6G / 88.8G / 89.0G... \$7479 / \$7489 / \$7499
 AMD Duron 89.2G / 89.4G / 89.6G... \$7529 / \$7539 / \$7549
 AMD Duron 89.8G / 90.0G / 90.2G... \$7579 / \$7589 / \$7599
 AMD Duron 90.4G / 90.6G / 90.8G... \$7629 / \$7639 / \$7649
 AMD Duron 91.0G / 91.2G / 91.4G... \$7679 / \$7689 / \$7699
 AMD Duron 91.6G / 91.8G / 92.0G... \$7729 / \$7739 / \$7749
 AMD Duron 92.2G / 92.4G / 92.6G... \$7779 / \$7789 / \$7799
 AMD Duron 92.8G / 93.0G / 93.2G... \$7829 / \$7839 / \$7849
 AMD Duron 93.4G / 93.6G / 93.8G... \$7879 / \$7889 / \$7899
 AMD Duron 94.0G / 94.2G / 94.4G... \$7929 / \$7939 / \$7949
 AMD Duron 94.6G / 94.8G / 95.0G... \$7979 / \$7989 / \$7999
 AMD Duron 95.2G / 95.4G / 95.6G... \$8029 / \$8039 / \$8049
 AMD Duron 95.8G / 96.0G / 96.2G... \$8079 / \$8089 / \$8099
 AMD Duron 96.4G / 96.6G / 96.8G... \$8129 / \$8139 / \$8149
 AMD Duron 97.0G / 97.2G / 97.4G... \$8179 / \$8189 / \$8199
 AMD Duron 97.6G / 97.8G / 98.0G... \$8229 / \$8239 / \$8249
 AMD Duron 98.2G / 98.4G / 98.6G... \$8279 / \$8289 / \$8299
 AMD Duron 98.8G / 99.0G / 99.2G... \$8329 / \$8339 / \$8349
 AMD Duron 99.4G / 99.6G / 99.8G... \$8379 / \$8389 / \$8399
 AMD Duron 100.0G / 100.2G / 100.4G... \$8429 / \$8439 / \$8449
 AMD Duron 100.6G / 100.8G / 101.0G... \$8479 / \$8489 / \$8499
 AMD Duron 101.2G / 101.4G / 101.6G... \$8529 / \$8539 / \$8549
 AMD Duron 101.8G / 102.0G / 102.2G... \$8579 / \$8589 / \$8599
 AMD Duron 102.4G / 102.6G / 102.8G... \$8629 / \$8639 / \$8649
 AMD Duron 103.0G / 103.2G / 103.4G... \$8679 / \$8689 / \$8699
 AMD Duron 103.6G / 103.8G / 104.0G... \$8729 / \$8739 / \$8749
 AMD Duron 104.2G / 104.4G / 104.6G... \$8779 / \$8789 / \$8799
 AMD Duron 104.8G / 105.0G / 105.2G... \$8829 / \$8839 / \$8849
 AMD Duron 105.4G / 105.6G / 105.8G... \$8879 / \$8889 / \$8899
 AMD Duron 106.0G / 106.2G / 106.4G... \$8929 / \$8939 / \$8949
 AMD Duron 106.6G / 106.8G / 107.0G... \$8979 / \$8989 / \$8999
 AMD Duron 107.2G / 107.4G / 107.6G... \$9029 / \$9039 / \$9049
 AMD Duron 107.8G / 108.0G / 108.2G... \$9079 / \$9089 / \$9099
 AMD Duron 108.4G / 108.6G / 108.8G... \$9129 / \$9139 / \$9149
 AMD Duron 109.0G / 109.2G / 109.4G... \$9179 / \$9189 / \$9199
 AMD Duron 109.6G / 109.8G / 110.0G... \$9229 / \$9239 / \$9249
 AMD Duron 110.2G / 110.4G / 110.6G... \$9279 / \$9289 / \$9299
 AMD Duron 110.8G / 111.0G / 111.2G... \$9329 / \$9339 / \$9349
 AMD Duron 111.4G / 111.6G / 111.8G... \$9379 / \$9389 / \$9399
 AMD Duron 112.0G / 112.2G / 112.4G... \$9429 / \$9439 / \$9449
 AMD Duron 112.6G / 112.8G / 113.0G... \$9479 / \$9489 / \$9499
 AMD Duron 113.2G / 113.4G / 113.6G... \$9529 / \$9539 / \$9549
 AMD Duron 113.8G / 114.0G / 114.2G... \$9579 / \$9589 / \$9599
 AMD Duron 114.4G / 114.6G / 114.8G... \$9629 / \$9639 / \$9649
 AMD Duron 115.0G / 115.2G / 115.4G... \$9679 / \$9689 / \$9699
 AMD Duron 115.6G / 115.8G / 116.0G... \$9729 / \$9739 / \$9749
 AMD Duron 116.2G / 116.4G / 116.6G... \$9779 / \$9789 / \$9799
 AMD Duron 116.8G / 117.0G / 117.2G... \$9829 / \$9839 / \$9849
 AMD Duron 117.4G / 117.6G / 117.8G... \$9879 / \$9889 / \$9899
 AMD Duron 118.0G / 118.2G / 118.4G... \$9929 / \$9939 / \$9949
 AMD Duron 118.6G / 118.8G / 119.0G... \$9979 / \$9989 / \$9999
 AMD Duron 119.2G / 119.4G / 119.6G... \$10029 / \$10039 / \$10049
 AMD Duron 119.8G / 120.0G / 120.2G... \$10079 / \$10089 / \$10099
 AMD Duron 120.4G / 120.6G / 120.8G... \$10129 / \$10139 / \$10149
 AMD Duron 121.0G / 121.2G / 121.4G... \$10179 / \$10189 / \$10199
 AMD Duron 121.6G / 121.8G / 122.0G... \$10229 / \$10239 / \$10249
 AMD Duron 122.2G / 122.4G / 122.6G... \$10279 / \$10289 / \$10299
 AMD Duron 122.8G / 123.0G / 123.2G... \$10329 / \$10339 / \$10349
 AMD Duron 123.4G / 123.6G / 123.8G... \$10379 / \$10389 / \$10399
 AMD Duron 124.0G / 124.2G / 124.4G... \$10429 / \$10439 / \$10449
 AMD Duron 124.6G / 124.8G / 125.0G... \$10479 / \$10489 / \$10499
 AMD Duron 125.2G / 125.4G / 125.6G... \$10529 / \$10539 / \$10549
 AMD Duron 125.8G / 126.0G / 126.2G... \$10579 / \$10589 / \$10599
 AMD Duron 126.4G / 126.6G / 126.8G... \$10629 / \$10639 / \$10649
 AMD Duron 127.0G / 127.2G / 127.4G... \$10679 / \$10689 / \$10699
 AMD Duron 127.6G / 127.8G / 128.0G... \$10729 / \$10739 / \$10749
 AMD Duron 128.2G / 128.4G / 128.6G... \$10779 / \$10789 / \$10799
 AMD Duron 128.8G / 129.0G / 129.2G... \$10829 / \$10839 / \$10849
 AMD Duron 129.4G / 129.6G / 129.8G... \$10879 / \$10889 / \$10899
 AMD Duron 130.0G / 130.2G / 130.4G... \$10929 / \$10939 / \$10949
 AMD Duron 130.6G / 130.8G / 131.0G... \$10979 / \$10989 / \$10999
 AMD Duron 131.2G / 1

Long levers

Continued from page 4E.

Price: \$790

Pros: Very compact, clean design with just a few buttons in standard control. Lens barrel is threaded to accommodate filter or auxiliary lens. Core CMOS camera is non-flashed. Function of power switch makes it easy to inadvertently turn camera on.



Its simple controls make the FirePro 2400 a good candidate for someone who isn't into photography as a hobby and just wants to take pictures on a free-time way. There is a manual setting, which allows exposure compensation, a shutter priority mode, and customized white balance settings.

That's probably as complicated as the typical user of this camera wants it

needs to get. Most of the best buttons and knobs the camera does have are clustered on the right side of the camera, and easily accessible with your thumb and index finger. We didn't care for the placement of the power switch, which is embedded on a moving ring that surrounds the shutter. On several occasions,

we accidentally turned the camera on as we just hit back on the camera button.

But on the plus side, it has a big handgrip incorporated into the right side of body, which makes the camera very easy to hold comfortably. Rubber marks on the back and front of the handgrip, where your thumb and fingers come in

contact with the camera, also enhance the feeling of comfort. Interestingly, the front door swings away from the lens, not an external door like some adapter extensions (which ships in the box). With the extension, you can add an optional wide-angle or telephoto adapter, or filters—more touch.

TCP Lab: What about digital zoom?

If you're thinking you could get a 35X zoom because a camera has a 30X optical and 5X digital zoom, don't put too much faith in that equation. A digital zoom is actually just an in-camera crop of the central part of an image. The resulting pictures are either of poorer quality or of a smaller dimension than the camera's maximum size capability.

Next of the cameras in this lab test offer a digital zoom, and used in moderation, they can give you even greater reach, but the camera makes themselves (at least some of them) warn of degraded image quality when you use a digital zoom. I find it somewhat puzzling that manufacturers would go to the considerable effort of putting big optical zooms in these models, but then offer users a way to fail it all up with a digital zoom.

The Sony labelling is particularly odd in this respect. It has "30X Precision Digital Zoom" listed on the F217, but makes no mention of the very fine Carl Zeiss Jena optical lens it uses—yet, the manual cautions about image degradation when the digital zoom is used.

HP's P506 is believed to have a 50X zoom, which is technically accurate but glosses over the important distinction between optical and digital zooming. The P506's 4X optical zoom, which gives the equivalent of a 200-megalephoto on a 35 mm film camera, is noteworthy in itself.

The rest in the group thankfully label the camera's optical zoom properties.

—David Trosko

FirePro 2400

FirePro 2400 Photo Film Camera, www.firepro.com
Price: \$100

Pros: Manual focusing ring. Dual memory slots support SmartMedia and CF. Including 1 GB nonvolatile. Convenient placement of camera (exposure and AC lock controls). Cons: Large handgrip may be uncomfortable for some. Requires non-standard USB cable.



Continued on page 4E

AMD K6-2 System

AMD K6-2 CPU
386/486/586/686/786/886/986/1086/1186/1286/1386/1486/1586/1686/1786/1886/1986/2086/2186/2286/2386/2486/2586/2686/2786/2886/2986/3086/3186/3286/3386/3486/3586/3686/3786/3886/3986/4086/4186/4286/4386/4486/4586/4686/4786/4886/4986/5086/5186/5286/5386/5486/5586/5686/5786/5886/5986/6086/6186/6286/6386/6486/6586/6686/6786/6886/6986/7086/7186/7286/7386/7486/7586/7686/7786/7886/7986/8086/8186/8286/8386/8486/8586/8686/8786/8886/8986/9086/9186/9286/9386/9486/9586/9686/9786/9886/9986/10086/10186/10286/10386/10486/10586/10686/10786/10886/10986/11086/11186/11286/11386/11486/11586/11686/11786/11886/11986/12086/12186/12286/12386/12486/12586/12686/12786/12886/12986/13086/13186/13286/13386/13486/13586/13686/13786/13886/13986/14086/14186/14286/14386/14486/14586/14686/14786/14886/14986/15086/15186/15286/15386/15486/15586/15686/15786/15886/15986/16086/16186/16286/16386/16486/16586/16686/16786/16886/16986/17086/17186/17286/17386/17486/17586/17686/17786/17886/17986/18086/18186/18286/18386/18486/18586/18686/18786/18886/18986/19086/19186/19286/19386/19486/19586/19686/19786/19886/19986/20086/20186/20286/20386/20486/20586/20686/20786/20886/20986/21086/21186/21286/21386/21486/21586/21686/21786/21886/21986/22086/22186/22286/22386/22486/22586/22686/22786/22886/22986/23086/23186/23286/23386/23486/23586/23686/23786/23886/23986/24086/24186/24286/24386/24486/24586/24686/24786/24886/24986/25086/25186/25286/25386/25486/25586/25686/25786/25886/25986/26086/26186/26286/26386/26486/26586/26686/26786/26886/26986/27086/27186/27286/27386/27486/27586/27686/27786/27886/27986/28086/28186/28286/28386/28486/28586/28686/28786/28886/28986/29086/29186/29286/29386/29486/29586/29686/29786/29886/29986/30086/30186/30286/30386/30486/30586/30686/30786/30886/30986/31086/31186/31286/31386/31486/31586/31686/31786/31886/31986/32086/32186/32286/32386/32486/32586/32686/32786/32886/32986/33086/33186/33286/33386/33486/33586/33686/33786/33886/33986/34086/34186/34286/34386/34486/34586/34686/34786/34886/34986/35086/35186/35286/35386/35486/35586/35686/35786/35886/35986/36086/36186/36286/36386/36486/36586/36686/36786/36886/36986/37086/37186/37286/37386/37486/37586/37686/37786/37886/37986/38086/38186/38286/38386/38486/38586/38686/38786/38886/38986/39086/39186/39286/39386/39486/39586/39686/39786/39886/39986/40086/40186/40286/40386/40486/40586/40686/40786/40886/40986/41086/41186/41286/41386/41486/41586/41686/41786/41886/41986/42086/42186/42286/42386/42486/42586/42686/42786/42886/42986/43086/43186/43286/43386/43486/43586/43686/43786/43886/43986/44086/44186/44286/44386/44486/44586/44686/44786/44886/44986/45086/45186/45286/45386/45486/45586/45686/45786/45886/45986/46086/46186/46286/46386/46486/46586/46686/46786/46886/46986/47086/47186/47286/47386/47486/47586/47686/47786/47886/47986/48086/48186/48286/48386/48486/48586/48686/48786/48886/48986/49086/49186/49286/49386/49486/49586/49686/49786/49886/49986/50086/50186/50286/50386/50486/50586/50686/50786/50886/50986/51086/51186/51286/51386/51486/51586/51686/51786/51886/51986/52086/52186/52286/52386/52486/52586/52686/52786/52886/52986/53086/53186/53286/53386/53486/53586/53686/53786/53886/53986/54086/54186/54286/54386/54486/54586/54686/54786/54886/54986/55086/55186/55286/55386/55486/55586/55686/55786/55886/55986/56086/56186/56286/56386/56486/56586/56686/56786/56886/56986/57086/57186/57286/57386/57486/57586/57686/57786/57886/57986/58086/58186/58286/58386/58486/58586/58686/58786/58886/58986/59086/59186/59286/59386/59486/59586/59686/59786/59886/59986/60086/60186/60286/60386/60486/60586/60686/60786/60886/60986/61086/61186/61286/61386/61486/61586/61686/61786/61886/61986/62086/62186/62286/62386/62486/62586/62686/62786/62886/62986/63086/63186/63286/63386/63486/63586/63686/63786/63886/63986/64086/64186/64286/64386/64486/64586/64686/64786/64886/64986/65086/65186/65286/65386/65486/65586/65686/65786/65886/65986/66086/66186/66286/66386/66486/66586/66686/66786/66886/66986/67086/67186/67286/67386/67486/67586/67686/67786/67886/67986/68086/68186/68286/68386/68486/68586/68686/68786/68886/68986/69086/69186/69286/69386/69486/69586/69686/69786/69886/69986/70086/70186/70286/70386/70486/70586/70686/70786/70886/70986/71086/71186/71286/71386/71486/71586/71686/71786/71886/71986/72086/72186/72286/72386/72486/72586/72686/72786/72886/72986/73086/73186/73286/73386/73486/73586/73686/73786/73886/73986/74086/74186/74286/74386/74486/74586/74686/74786/74886/74986/75086/75186/75286/75386/75486/75586/75686/75786/75886/75986/76086/76186/76286/76386/76486/76586/76686/76786/76886/76986/77086/77186/77286/77386/77486/77586/77686/77786/77886/77986/78086/78186/78286/78386/78486/78586/78686/78786/78886/78986/79086/79186/79286/79386/79486/79586/79686/79786/79886/79986/80086/80186/80286/80386/80486/80586/80686/80786/80886/80986/81086/81186/81286/81386/81486/81586/81686/81786/81886/81986/82086/82186/82286/82386/82486/82586/82686/82786/82886/82986/83086/83186/83286/83386/83486/83586/83686/83786/83886/83986/84086/84186/84286/84386/84486/84586/84686/84786/84886/84986/85086/85186/85286/85386/85486/85586/85686/85786/85886/85986/86086/86186/86286/86386/86486/86586/86686/86786/86886/86986/87086/87186/87286/87386/87486/87586/87686/87786/87886/87986/88086/88186/88286/88386/88486/88586/88686/88786/88886/88986/89086/89186/89286/89386/89486/89586/89686/89786/89886/89986/90086/90186/90286/90386/90486/90586/90686/90786/90886/90986/91086/91186/91286/91386/91486/91586/91686/91786/91886/91986/92086/92186/92286/92386/92486/92586/92686/92786/92886/92986/93086/93186/93286/93386/93486/93586/93686/93786/93886/93986/94086/94186/94286/94386/94486/94586/94686/94786/94886/94986/95086/95186/95286/95386/95486/95586/95686/95786/95886/95986/96086/96186/96286/96386/96486/96586/96686/96786/96886/96986/97086/97186/97286/97386/97486/97586/97686/97786/97886/97986/98086/98186/98286/98386/98486/98586/98686/98786/98886/98986/99086/99186/99286/99386/99486/99586/99686/99786/99886/99986/100086/100186/100286/100386/100486/100586/100686/100786/100886/100986/101086/101186/101286/101386/101486/101586/101686/101786/101886/101986/102086/102186/102286/102386/102486/102586/102686/102786/102886/102986/103086/103186/103286/103386/103486/103586/103686/103786/103886/103986/104086/104186/104286/104386/104486/104586/104686/104786/104886/104986/105086/105186/105286/105386/105486/105586/105686/105786/105886/105986/106086/106186/106286/106386/106486/106586/106686/106786/106886/106986/107086/107186/107286/107386/107486/107586/107686/107786/107886/107986/108086/108186/108286/108386/108486/108586/108686/108786/108886/108986/109086/109186/109286/109386/109486/109586/109686/109786/109886/109986/110086/110186/110286/110386/110486/110586/110686/110786/110886/110986/111086/111186/111286/111386/111486/111586/111686/111786/111886/111986/112086/112186/112286/112386/112486/112586/112686/112786/112886/112986/113086/113186/113286/113386/113486/113586/113686/113786/113886/113986/114086/114186/114286/114386/114486/114586/114686/114786/114886/114986/115086/115186/115286/115386/115486/115586/115686/115786/115886/115986/116086/116186/116286/116386/116486/116586/116686/116786/116886/116986/117086/117186/117286/117386/117486/117586/117686/117786/117886/117986/118086/118186/118286/118386/118486/118586/118686/118786/118886/118986/119086/119186/119286/119386/119486/119586/119686/119786/119886/119986/120086/120186/120286/120386/120486/120586/120686/120786/120886/120986/121086/121186/121286/121386/121486/121586/121686/121786/121886/121986/122086/122186/122286/122386/122486/122586/122686/122786/122886/122986/123086/123186/123286/123386/123486/123586/123686/123786/123886/123986/124086/124186/124286/124386/124486/124586/124686/124786/124886/124986/125086/125186/125286/125386/125486/125586/125686/125786/125886/125986/126086/126186/126286/126386/126486/126586/126686/126786/126886/126986/127086/127186/127286/127386/127486/127586/127686/127786/127886/127986/128086/128186/128286/128386/128486/128586/128686/128786/128886/128986/129086/129186/129286/129386/129486/129586/129686/129786/129886/129986/130086/130186/130286/130386/130486/130586/130686/130786/130886/130986/131086/131186/131286/131386/131486/131586/131686/131786/131886/131986/132086/132186/132286/132386/132486/132586/132686/132786/132886/132986/133086/133186/133286/133386/133486/133586/133686/133786/133886/133986/134086/134186/134286/134386/134486/134586/134686/134786/134886/134986/135086/135186/135286/135386/135486/135586/135686/135786/135886/135986/136086/136186/136286/136386/136486/136586/136686/136786/136886/136986/137086/137186/137286/137386/137486/137586/137686/137786/137886/137986/138086/138186/138286/138386/138486/138586/138686/138786/138886/138986/139086/139186/139286/139386/139486/139586/139686/139786/139886/139986/140086/140186/140286/140386/140486/140586/140686/140786/140886/140986/141086/141186/141286/141386/141486/141586/141686/141786/141886/141986/142086/142186/142286/142386/142486/142586/142686/142786/142886/142986/143086/143186/143286/143386/143486/143586/143686/143786/143886/143986/144086/144186/144286/144386/144486/144586/144686/144786/144886/144986/145086/145186/145286/145386/145486/145586/145686/145786/145886/145986/146086/146186/146286/146386/146486/146586/146686/146786/146886/146986/147086/147186/147286/147386/147486/147586/147686/147786/147886/147986/148086/148186/148286/148386/148486/148586/148686/148786/148886/148986/149086/149186/149286/149386/149486/149586/149686/149786/149886/149986/150086/150186/150286/150386/150486/150586/150686/150786/150886/150986/151086/151186/151286/151386/151486/151586/151686/151786/151886/151986/152086/152186/152286/152386/152486/152586/152686/152786/152886/152986/153086/153186/153286/153386/153486/153586/153686/153786/153886/153986/154086/154186/154286/154386/154486/154586/154686/154786/154886/154986/155086/155186/155286/155386/155486/155586/155686/155786/155886/155986/156086/156186/156286/156386/156486/156586/156686/156786/156886/156986/157086/157186/157286/157386/157486/157586/157686/157786/157886/157986/158086/158186/158286/158386/158486/158586/158686/158786/158886/158986/159086/159186/159286/159386/159486/159586/159686/159786/159886/159986/160086/160186/160286/160386/160486/160586/160686/160786/160886/160986/161086/161186/161286/161386/161486/161586/161686/161786/161886/161986/162086/162186/162286/162386/162486/162586/162686/162786/162886/162986/163086/163186/163286/163386/163486/163586/163686/163786/163886/163986/164086/164186/164286/164386/164486/164586/164686/164786/164886/164986/165086/165186/165286/165386/165486/165586/165686/165786/165886/165986/166086/166186/166286/166386/166486/166586/166686/166786/166886/166986/167086/167186/167286/167386

Digital photography to the masses, and the PhotoSmart P900 is its top tool to fulfill that goal. Extreme photo hobbyists will find little to get excited about with this camera, but for those who just want to capture special moments without having to become a technician, this camera is worth a look.



Like the Pictafilm S900, it is definitely aimed at the point-and-shoot crowd, with a few controls that let users adjust exposure and other settings—but without overwhelming them with choices. Further catering to the ease-of-use crowd, the P900 has a built-in utility called Live and Share, which allows you to select photos to be printed. The P900 can also be directly connected to an HP DeskJet or PhotoSmart printer, bypassing a computer altogether.

The Instant Share utility also allows you to load email addresses into the camera from a computer, and tag them to images. When you connect the camera to a computer (with an Internet connection) emails are sent to the appropriate addresses notifying them that you've sent them a picture, giving the URL (HP's picture hosting site) where the images can be viewed.

This model implements the autofocus preview in an interesting way. As with other cameras, you push the shutter button part-way down to activate the autofocus, but unlike others, which sharpen the view in real time as the focus is established, on the HP you have to release the shutter button before the focus is updated in the viewfinder.

We don't think much of digital zooming, which is actually just an in-camera crop of a smaller portion of the scene, so don't like that HP hides the camera as having a 56X zoom. The 8X optical zoom is unusual enough to allow HP bragging rights without glossing over, and possibly confusing the consumer about, the important distinction between optical and digital zooms.

Continued on page 50

Virus Attack, Again?

Your WEB HOST should protect you from email viruses.

Host at Dollarhost and protect yourself with FREE Email Virus Scanning service, powered by Symantec Corporate Scan Server.

Dollarhost has hosting services for all host/linux and individuals. The offer hosting for many popular applications: CGI-Perl, ASP, PHP and ColdFusion.

Dollarhost hosting provides you with fast, reliable web servers, 100% uptime, 24/7, professional customer support, uniform strong and priced affordably. Dollarhost has helped thousands of Canadian business and individuals establish their web presence since 1996.

Shared Hosting

- Linux and Windows Hosting
- POP/IMAP Email Accounts
- Web-based Email Access
- MS FrontPage Support
- Online Statistics
- PHP, CGI, ASP
- ColdFusion
- Database Support
- Email Virus Scanning

Dedicated Hosting

- Secured Data Center
- Intel Server
- Linux or Windows Platform
- RAID Redundancy
- UPS Power Backup
- Flexible Options

Domain Registration

- .com, .net, .org, .ca, .biz, .info
- Free domain parking
- Free "under construction" page.

800-999-9999 or visit our website: www.dollarhost.com
 1000-1000-1000 or call 1-888-888-8888



dollarhost
 making web hosting affordable

© 2000 Dollarhost Inc. All rights reserved. Dollarhost is a registered trademark of Dollarhost Inc. All other trademarks are the property of their respective owners.

Long lookers

Continued from page 49

CoolPix 5700

From: Nikon of Canada, www.nikon.ca

Price: \$1,170

Pros: Solid lens, EX cover gives variable-angle telephoto range. Clear electronic viewfinder. Can. Ambient-contrast of power switch. Non-slip and USB plug.



The CoolPix 5700 has a lot that will suit style and not reach to disappoint the pros. When the review unit arrived, I was surprised at how small it is. More than the others, it has the feel of a finely crafted instrument; the solid metal case

contributes to that impression.

As with the Stylus line-ups, I didn't care for the placement of the power switch on the top of the handle; I accidentally turned it on when putting it in a camera bag many times. Initially the placement and grouping of controls didn't make sense to me. It took only about 10 minutes of fiddling with the various controls and a quick read of some of the manual before I felt settled. Still, of the high-end cameras in this report, I liked the control system the best.

Chalk it up to personal preference, because once you get down to the business of taking pictures, the controls you use most likely to use are conveniently placed.

Exposure compensation is the same procedure as on the FujiFilm 560Z—press the compensation button near your trigger finger and adjust with the (discovered) wheel. Likewise, exposure and focus lock is a single button, near the thumb of your left hand—very handy. The 3X optical zoom gives a good range,

TCP Lab: Tips for shooting long

1. Use a tripod

A good way to improve the sharpness of your images comes in the use of a tripod. When using any of these cameras at the larger focal lengths, a tripod becomes all the more important because any camera movement will be magnified, creating blurred images. A rule of thumb in 35 mm photography is that the minimum shutter speed to ensure a clear hand-held shot is the inverse of the focal length. So at 200 mm, you should use a shutter speed of at least 1/200 second—or use a tripod.

2. Use exposure and focus lock

Digital cameras have gained a bad reputation for shutter lag. You press the shutter button and then, after what seems like an eternity, the camera captures the tail end of the precious moment. Shutter lag is especially frustrating when you are trying to take a picture of a moving object at full telephoto, since the action quickly slips in and out of the frame—say you're on the sidelines watching your son or daughter climbing on the goal.

Using manual focus and AE lock or manual exposure control can go a long way toward shortening the time it takes for the camera shutter to fire. A lot of shutter lag is created by the camera calculating the correct focus and exposure. When you attempt to photograph a moving subject,

the light levels and subject distances are constantly changing so the AE and AF systems are continually recalculating the correct value.

Turning to manual focus will bypass the auto focus system, and setting the distance to infinity (at the hyperfocal distance if you know about that) will put most of the scene from 2 m or 4 m and beyond in focus. Likewise, taking an exposure reading and then locking it in using AE lock, or setting the shutter speed and aperture yourself in manual mode, will bypass the AE system. You may find you still need to keep the shutter button partly down, but when you depress it all the way the shutter should fire immediately.

3. Mind the focus

Depth of field (the zone of sharp focus) can be quite shallow on long telephotoes. This can be used to good artistic effect (e.g., main subject in focus and back ground softly out of focus), but it also means you need to be aware of what part of the photo is in focus and make adjustments (either by using a manual focusing option, or picking the correct autofocus zone if your camera supports adjustable zones). Picking a small aperture will increase depth of field, but will also have you to use a slower shutter speed to maintain the correct exposure.

—David Dunlop

from a respectable 35 mm at wide angle to 280 mm at full telephoto. The electronic viewfinder is very clear, and the LCD screen is a flip-and-raise design that allows you to compose a shot when the camera is above or below your eye level—use facing you, for self portraits.

Damage 710

From: Blackstar Canada, www.blackstar.ca

Price: \$2,800

Pros: Manual focus and zoom rings on lens barrel. Wide-angle view of the group. Loading made fast. Clear viewfinder.

Cons: Most expensive camera in this roundup.



The Damage 710 has the big surprise on this group for me—I liked it for more than I thought. I work, and I found myself wondering, if I shot, the other cameras have a rear window that's more or less flat, but on the Damage the screen that houses the lens extends backward from the body. It holds the viewfinder in a very clear view, LCD screen, and the four AA cells, which are on the bottom of the camera, running parallel to the lens. It's an unusual design that I thought would be ungainly until I started using it. I found it to be well balanced, but the big plus was that moving the handgrip forward in relation to the eyepiece creates a shooting position that's most comfortable.

Likewise, the control system initially mystified me, but once I read the manual and discovered the basic methodology, it made a lot of sense, and proved efficient. The surface is cluttered with lots of dials and buttons. The basic method for adjusting a setting is to use the relevant dial to the function you want to access, press the button in the centre of the dial to activate the setting, then adjust using a separate thumbwheel. It sounds involved, but it actually works very well, once you understand it.

The Damage has the best wide-angle coverage of the group, going to 28 mm (35-mm film equivalent). The difference between 35 mm and 28 mm is much

more dramatic than between 200 mm and 310 mm on the telephoto end.

Because of its weight, size, and the manual zooming ring, it feels more like a 35 mm SLR than the others. This camera would probably give the least camera shock to a 35-mm photographer who's going to digital.

Camera C 710

From: Olympus, www.olympuscanada.com

Price: \$2,000

Pros: Longest telephoto. Very compact.

Cons: No manual focus. Focus lock cumbersome.



At around \$800 is stores, the C-710 costs a few hundred dollars more than the other cameras listed. Three megapixel cameras it might be competing with, if a long telephoto is what you're after, however, that unit gives you the longest reach (equivalent to 380 mm) as well as the largest range (10X), in the zoom. The C-710 uses an electronic viewfinder but its proportions are more like rangefinder cameras, and it looks like cutting-edge—almost plain—compared to the others. There are no rubber zooms to improve grip, but the camera body is relatively slim, so that's not a big detraction.

The simplicity of design has its advantages. It has fewer buttons and dials than the five-megapixel cameras, but the most common controls are there, so less time is needed to master this camera.

And what a reach. With a maximum telephoto of 380 mm (35 mm equivalent), subjects are magnified almost eight times compared to what you see normally with the unaided eye.

One feature that camera really needs is a more accessible manual focus mode. With the extreme telephoto and a moving subject, I missed a lot of shots because the auto focus was hunting, and the action passed before the camera took the shot. In order to implement manual focus, you have to hold the menu OK button down for a few seconds, then select manual focus. On other cameras, this is

Continued on page 42

A Display of Amazement.

AOpen's F-Series of LCD Monitors

There are lots of reasons why LCD monitors from AOpen are so amazing. For starters, you'll quickly notice their incomparable clarity and sharpness — superbly showing every colorful detail — with a maximum resolution of 1600 x 1200 @250 Hz and an ultra-fine dot pitch of 0.26". Then there's the huge amount of space you'll see on your desktop when you replace your old CRT model with either a 15-inch or 17-inch AOpen LCD. And there's the impressive 3-year warranty on parts and labor, built-in speakers, on-screen menu controls and an optional wall mount kit, and you've got a truly amazing combination.

The only thing more amazing is the price! AOpen's F-Series of LCD monitors are priced just right — to fit your budget and your lifestyle.

1-888-97-AOPEN
www.aopen.com

See Your AOpen Premium Reseller Today!

BJ Technology 604-325-8859 • Arktech Computer Technology 604-435-2038 • Computrade Systems 604-270-4757
Egleba 604-473-4174 • Eitech 604-303-8718 • Premier Computer-Broadway 604-239-9060

AOpen
Total Component Solutions

Music To The Ear.

Candy To The Eye.

AOpen's Titanium GT Surround Sound Speakers

If you're looking for an amazing way to add full, rich 360-degree surround sound to your PC, check out



AOpen's new Titanium GT Speakers.

Featuring AOpen's exclusive CylindDynamics Sound Wave technology, these small front-

plane speakers are also ideal for adding audio input to your laptop, home entertainment center, portable CD or MP3 player. Gamers and audiophiles alike will also appreciate the Titanium

GT's gorgeous design, firm deep bass to crisp treble.

See try the new Titanium GT Surround Sound Speakers from AOpen today. They're a great treat to your ears, ears, and your pocketbook.

The Titanium GT Surround Sound Speakers from AOpen feature aluminum cylindrical shells, a reusable adjustable case, and a sound remote control.

1-888-97-AOPEN
www.aopen.com

See Your AOpen Premium Reseller Today!

Frontier Computer • Gateway 604-434-3800 • HL Technology 604-783-2125 • New Type Computer Workshop 604-898-0218
Patch Computer 604-273-4408 • Spigen Tech 604-713-8950

AOpen
Total Component Solutions

©2000 AOpen Technology, Inc. All rights reserved. AOpen, the AOpen logo, and Titanium are trademarks of AOpen.

Working on the horizon

Continued from page 34
arranged to stay up-to-date with the changing world of desktop publishing. By doing so, they were able to advise or even coach our clients as they incorporated desktop publishing into their own businesses. Our advantages continued to increase.

It was in sales that technology gave us our greatest edge. Following the advice of some savvy telemarketers, TCP conducted advertising sales as a telemarketing operation. In those days old phones, email, or even computer networks were far from ubiquitous, so our most important telemarketing tools were our home-grown database and the fax machine.

After Doug got the original database working, it became almost a collective development effort. Sales staff followed

his lead by learning the inner workings of the database, collaborating on the changes required for TCP's expanding business.

Fax technology, while it seems old hat today, was far from universal in 1988. This simple technique of transferring graphic information over phone lines enabled TCP sales staff to communicate ad concepts with clients using a modest amount of the client's prime business time. We employed fax communication to a greater degree than other publishers of the day. The sales efficiency gained from the use of the database and fax allowed TCP sales staff to sell more of the publication's pages plus take on other tasks in administration, distribution, and even pre-press. We were a small group doing many jobs.

Work on the horizon was not all hardship and trial. As *The Computer Paper's* influence spread, marketing departments at software and hardware vendors started to take notice. We began to receive evaluation copies and lower rates of new products on the chance we might write about them. It seemed to us as if each new test was ours to play with just for the asking. TCP was, at that time, a cheerful Mac shop (dictated by our times as well as by publishing efficiency). As a result, we pointed out the Macintosh side. The DOS/PC products were often forwarded to PC enthusiasts for their evaluation. Even today there remains a fascination with all the new toys that TCP editors have to evaluate. It's nice work if you can get it.

In the mid-'90s the business world,

business at Vancouver, ran an interview with Doug When asked to what he attributed the success of *The Computer Paper*, he responded that good service was most important, followed by good people. How true.

Getting business representatives going at TCP required an ample dose of good fortune. It also required that a small, capable group use emerging technologies to create a publishing advantage that led to TCP's ultimate success. □

Her Singh Khalsa is a multi-lingualist at Vancouver. He was the first full-time employee at *The Computer Paper* and was Associate Publisher when he left 11 years later. His current interest is negotiating legislation into desktop publishing when something for or against the question "Why is this happening?" he can be reached at her@tcp.ca.

The Computer Paper hits Newgreen

Continued from page 40...

people, and the Toronto Computers Center, since Doug had bought out the Toronto rival several months before, and moved both teams into the same space.

While I developed a strategy for the

benchmarking reviews, Doug arranged for us to rent a huge, bare room elsewhere in the building to house the new Test Lab I put in a bunch of long wooden tables, power bars and a phone, and started calling all the major computer, network, and printer companies in the

Toronto area and across the country. In fact, the Test Lab had been located in the new Toronto office, rather than the Vancouver head office, because about 90 percent of the major PC hardware and peripheral brand head offices were located in the Toronto region.

PC mania

Doug's timing in his Ontario expansion was perfect: the early to mid-'90s, when he entered the Toronto market, battled and absorbed his main competitor, and started the Test Lab, was the Golden Age of the personal computer as a mass market phenomenon. Every year, PC sales rose 15 to 25 percent higher than the previous year. Moore's Law changed along, and computer processors doubled in speed every 12 to 18 months, and all the other components of PC systems—monitors, printers, hard drives, graphics, audio and memory—increased in capabilities and dropped in price.

The readiness for TCP, the *Quipcom's* titles and our French lan-

guage title, *Quelch chose?*, skyrocketed to over a million each month, as more and more Canadians got into home and small business computing for the first time, and searched for accurate Canada-specific product reviews and retail advice.

Back with work

With the long hangover of the desktop bubble's bursting, and the uncertainty post-Sept. 11, *The Computer Paper* has become a more sales publication in a more sales industry. It has always tried to be useful to its readers, offering editorial content of objective, accurate stories about how to use technology to make a better life, and at the same time to provide a range of vendors' ads that is both a reflection of the very competitive Canadian retail industry, and an up-to-date, easy to use buying guide for the consumer.

The hot spots in the tech industry in 2003 are different than they were a decade ago. Instead of the PC-software market as in 1993, the focus is now on mobile computing, wired and wireless data and voice networking, digital entertainment media, new user interfaces and form factors, ease of use, and increasing productivity in learning, doing business, and communication. □

Jeff Evans, *The Computer Paper's* first technical editor, set up the Test Lab in 1994, making TCP Canada's first tech publication to provide made-in-Canada competitive benchmarks to computer hardware. He was also the founding editor of *Canada Computer Paper's* award-winning Web site, www.canadacomputers.com.

Looking for technology or computer related products?



Within minutes, the www.canadacomputers.com Merchant Directory provides you with the local retailer you need.

MERCHANT DIRECTORY

WWW.CANADACOMPUTES.COM/MERCHANT_DIRECTORY

Express yourself

Send your opinions, ideas, hints, and raves to letters@tcp.ca



ATOP COMPUTER

Member of Better Business Bureau

website: <http://www.atop.ca>
e-mail: atop@atop.bc.ca



#10083 136A Street
Burnaby, BC, V5T 4G1
Tel: 604-514-0533
Fax: 604-514-0445



#20918 Fraser Hwy.
Langley, BC, V5A 4E6
Tel: 604-514-0130
Fax: 604-514-0133

Business Hours
Monday - Saturday
10:00 AM - 18:00 PM



Dual M7200+ 1.6GHz Video MultiFlash System

AMD Athlon M7200+ 1.6GHz CPU x 2
Asus A7N266-CL 4800MHz Motherboard
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
WD 80GB 4K16T 7200RPM Hard Drive
LG 480N48 CD-RW & Software
Creative Inspire 1000 3D Speaker System
Logitech Optical Wheel Mouse L3-PS/2
Win Computer PS2 Multimedia Keyboard
18" Tower Case w/300W P4 Power Supply

\$1795 OS & Monitor not included



Pentium 4 4GHz 533MHz 3D Xtreme Gamer System

Intel Pentium 4 4GHz/533MHz CPU
Asus P4M41 4800MHz Motherboard
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
Master 80GB 7200RPM Hard Drive
LG 480N48 CD-RW & Software
MSI GF4 Ti4200-8X 128MB DDR ASPR VGA
Creative 5.1 Channel HX Audio Codec
Integrated 10T1000 Ethernet LAN
Creative Inspire 4000 5.1 Speaker System
Logitech Optical Wheel Mouse L3-PS/2
Win Computer PS2 Multimedia Keyboard
18" Tower Case w/300W P4 Power Supply

\$1535 OS & Monitor not included



XP2000+ 1.3GHz 266MHz 3D Xtreme Gamer System

AMD Athlon XP2000+ 1.3GHz 266MHz CPU
Gigabyte GA-TX41 V1.0 4800MHz Motherboard
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
Master 80GB 7200RPM Hard Drive
LG 480N48 CD-RW & Software
MSI GF4 Ti4200-8X 128MB DDR ASPR VGA
VIA AC'97 3D Audio Codec on Board
Integrated 10T1000 Ethernet LAN
Creative Inspire 2900 3D Speaker System
Logitech Optical Wheel Mouse L3-PS/2
WinCom Computer PS2 Keyboard
18" Tower Case w/300W P4 Power Supply

\$1145 OS & Monitor not included



Pentium 4 4GHz 400MHz Gamer's Purpose System

Intel Pentium 4 4GHz/400MHz CPU
Gigabyte GA-BF400 4800MHz Motherboard
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
Master 80GB 7200RPM Hard Drive
LG 480N48 CD-RW & Software
Gigabyte 9004D 64MB DDR Video w/VO
VIA AC'97 3D Audio Codec on Board
Integrated 10T1000 Ethernet LAN
Creative Inspire 2900 3D Speaker System
Logitech Optical Wheel Mouse L3-PS/2
WinCom Computer PS2 Keyboard
18" Tower Case w/300W P4 Power Supply

\$1020 OS & Monitor not included



Duron 1.06GHz 266MHz Entry Level System

AMD Duron 1.06GHz 266MHz CPU
Gigabyte GA-TX41 V1.0 4800MHz Motherboard
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
Master 80GB 7200RPM Hard Drive
LG 480N48 CD-RW & Software
Vista THT 32MB 32MHz Video
VIA AC'97 3D Audio Codec on Board
Sunbeam 10T1000 P.C. Ethernet LAN
Jantek 140W 2-Port Speaker System
Internal Wheel Mouse PS2 & Pad
WinCom Computer PS2 Keyboard
18" Tower Case w/300W P4 Power Supply

\$655 OS & Monitor not included



Celeron 1.7GHz 400MHz Entry Level System

Intel Celeron 1.7GHz 400MHz CPU
Mother 384540X Max 4800MHz
Panicom 1.44MB Floppy Drive
32MB PCI7200 33MHz DDR RAM
Master 80GB 7200RPM Hard Drive
LG 480N48 CD-RW & Software
Vista THT 32MB 32MHz Video
VIA AC'97 3D Audio Codec on Board
Sunbeam 10T1000 P.C. Ethernet LAN
Jantek 140W 2-Port Speaker System
Internal Wheel Mouse PS2 & Pad
WinCom Computer PS2 Keyboard
18" Tower Case w/300W P4 Power Supply

\$755 OS & Monitor not included

what's on sale



Maxtor DiamondPlus Hard Drives

30GB 7200RPM UDMA133	\$105
60GB 7200RPM UDMA133	\$140
80GB 7200RPM UDMA133	\$164

nVidia GeForce Series Video Cards



HIS GeForce2 MX400 64MB SDRAM	\$63
HIS GeForce4 MX440 64MB DDR w/VO	\$69
HIS GeForce4 MX440 128MB DDR w/VO	\$129
MSI GeForce4 Ti4200-TD 128MB DDR	\$259

LG GCE4841B 48/24/48 IDE CDRW w/Software \$85

LieOn LTR48246S 48/24/48 CDRW w/Software \$65

D-Link DI-704P 4 Ports Router w/Print Server \$105

Zeca MV402 USB Digital PC Camera \$65

Samsung 855DF 20mm 1600x1200 19" Monitor \$366

Have your PC built the way you want

Visit www.ATOP.ca to find
out more customized systems
with Intel & AMD processors!!



All prices shown are subject to a 1% cash discount. Prices are subject to change without notice. Units are available while quantities last. ©2001 ATOP Computer. ATOP Computer is a registered trademark of ATOP Computer.

have anything plugged in (Ethernet, PC Card, or headphones, for example). If you use that as a desktop replacement,



you'll probably want to give up the straps off altogether. Because floppy and CD are not included, you'll need to get them separately if you'll require external drives to do your work.

Another potential issue is the battery. The Scribble uses one of electrolytic than long-life cells, but it's sealed inside the unit behind a panel that's screwed down. It's not really user-serviceable, and you can't just flip another battery in if you're out of juice, but you can wait most other Tablet PC or notebook models. Because the battery is designed to run for up to 12 hours, that shouldn't be a huge concern. If you do require a longer runtime than the internal battery will provide, you can always turn the Scribble up with electrolytic external power.

(One note with regards to the benchmarking: The unit we looked at was actually a pre-production sample that contained the same functionality as the shipping units, but which had slightly different specs from these models. We have listed the breakdown of the different models' specs above. The review model included an 866 MHz Pentium III processor, but only 128 MB of memory and a 20 GB hard drive. Because of that, you can expect slightly slower performance from the 9C-300 model and slightly better performance out of the 9C-500.)

Fujitsu Stylis: ST4100B

From: Fujitsu Canada Inc., www.fujitsu.ca
Estimated price: \$1,400

Pro: Slim design. Large hard drive. Integrated wireless networking. Wireless keyboard.

Con: Performance a bit slow using wireless keyboard. A bit awkward. Strange headphone placement.

Fujitsu's participation in the world of Tablet PC was to be expected, as the company has offered per-based units with touch-screen capability for a dozen years. The company's Tablet PC, the Stylis, is very aptly named. It's one of the most stylish models we've looked at, and having to send it back was heart-

breaking. The reason we liked it so much is because it's extremely compact and elegant—it's less than 2.5 cm (1 in.) thick, yet still manages to include a 40 GB hard drive, USB and FireWire ports, a PC Card slot, and integrated 802.11b wireless networking to supplement the 10/100 Ethernet and 56Kbps modem.



The screen is a bit small at only 10.4 inches, but it's very crisp. The whole thing fits into a sturdy magnesium alloy case. The battery makes up the bottom part of the bezel, which is a really nice design touch, because it will allow Fujitsu to bring out physically larger and longer-lasting batteries down the road without compromising the overall design.

The inclusion of a wireless keyboard is a very nice touch, because it means the data format isn't quite as limiting. The only real concern about the keyboard's usability is that it uses a line-of-sight infrared connection to a sensor on the front of the Tablet bezel, so you'll have to tilt the Stylis into a vertical position to use the keyboard comfortably. Because of this, you may want to consider the docking station option to make sure the unit is held upright properly; it's \$399 with a CD-ROM drive, and \$499 with a DVD/CD-RW combo drive. (Fujitsu also offers a leather portfolio case and a nylon attaché case, both of which double as stands for the Stylis.)

If you don't want to go through that hassle, the unit is still perfectly usable with serial input. The included pen can be tethered to the tablet so you won't lose it. Because the end of the pen is a tethering loop, the erase function on the stylus has been moved down to the two-way button (push down for right-click, push up for erase).

Even though there's a lot to like about the Stylis, there are a few potential problems worth noting. First, the head-

Continued on page 60



Don't be selfish - Share!

Sometimes the strongest connections are the ones you don't see. With no wires to wrestle with, the U.S. Robotics 22 Mbps Wireless Cable/DSL Router makes it easy to put a high-speed network connection wherever you need it, and now it's twice as fast!

Home
access &
Internet sharing
for real
people



For more information, visit www.usr.com/rebates
or call 1-877-KEATING.

U.S. Robotics

Ready. Set. Connect.

Take a few tablets

Continued from page 39
phone jack is located along the top of the screen, which means your headphones cord will drape down over the screen when you're using the unit in portrait mode. More problematic is the machine's overall horsepower: with an 800 MHz mobile Pentium III processor and only 256 MB of RAM, it may choke a bit if you throw anything really demanding at it (like multitasking) for general use it's just fine.

If you want to save a few dollars, take a look at the Stylatic ST410A, which omits the 802.11b wireless component and has a 20 GB hard drive instead of a 40 GB model. This version will run you \$3,599. All of these models can be ordered directly from Fujitsu.

Toshiba Portégé 3500

From: Toshiba Canada, www.toshiba.ca

Estimated price: \$2,749

The flat processor Big screen integrated wireless networking. Convertible design. Competitively priced. Both 15 and 10.5 lbs.

Can't live happy in CD drives. Potentially battery hungry.



Other manufacturers have gone with reasonably modest Tablet PC configurations, but Toshiba's having none of that. The Portégé 3500 is set up with enough processing power to do a lot of desktop PCs proud—a 1.33 GHz mobile Pentium III processor backed up with 256 MB of RAM (16 MB of which are used for video) and a large 40 GB hard drive.

Thus particular model is convertible, allowing you to use it in notebook or slate mode. Unlike the Acer model

above, it doesn't use side clips to keep the 12.1-inch screen in place. Instead it has a heavy-duty hinge that clicks into place unerringly at the extremities. It takes enough of a push to get it moving that it won't likely be knocked out of the proper orientation accidentally.

The design was well thought out for the most part. The screen is held tightly against the body with a tab-and-duck-clip-style fastener that flips into the right position depending on your orientation. The screen automatically reverts into portrait mode when you switch into dual-format. There's even a lock button next to the power switch, so you won't power off the tablet by mistake when you grab the Portégé by the bottom edge. If there's a complaint about the design, it's that it's slightly thicker on the hinge side, which may feel awkward.

The overall design is very elegant, and manages to cram in a lot of features. There are slots for both SecureDigital and CompactFlash removable media, right next to the PC card slot. It also has three choices for networking: 802.11b Ethernet, a 56Kbps modem, and built-in

802.11b wireless, which you can easily turn off using a small switch on the side, when you want to save battery power. The two biggest omissions here are the lack of FireWire and the fact that there's no floppy or CD drive, even though the Portégé is a notebook-style Tablet.

It's possible that the Portégé's strengths could become a weakness out in the field. The larger screen, the faster processor and the integrated wireless are all features that will rack back battery power. It's easy enough to adjust your usage to minimize problems, though (by turning off the wireless component, for example), and the very fact that Toshiba is offering a very powerful version of the Tablet PC for around the same price as the competitors' more modest units more than makes up for that.

Veniam: Tablet PC V100

From: NextForm Corp., www.nextform.com

Estimated price: \$2,049

The Company's expertise in display tech. Convert design. Includes 158 keyboard. Integrated wireless networking.

Continued on page 48

signup today

www.eshosting.ca

1-866-738-2077

AS LOW AS

2

web hosting

.00

Mini Plan \$3.95/mo

- 20 MB Web storage
- 5 email accounts

Start Up Plan \$4.95/mo

- 80 MB Web storage
- 10 email accounts

For a limited time,

pay \$1/month extra and get

a FREE .com, .net or .org domain

FEATURES

PHP/ASP/Perl/CGI FrontPage Support, Website Statistics, Multiple Domains, Unlimited Bandwidth Usage, MySQL, MS Access, 24/7 Technical Assistance

* Prices are in Canadian funds

60 ENTREPRENEUR FEBRUARY 2005 www.eshosting.com

EverSOURCETM Technology Inc.

A member of The Hut Group established in Taiwan since 1988

#103-13423, 78 Piv.

Surrey, BC, V8W 0A8

WEB
www.eversource.com

E-MAIL
source@eversource.com

TEL
(604) 502-7688

FAX
(604) 502-7686

TOLL FREE
1-888-303-9988

TOSHIBA



COMPAQ

Dealers Welcome

HOURS
Mon - Fri.: 9:30 - 5:30

Sat - Sun.: Closed



NoteBooks from
\$449.99

Notebooks Center

REFURBISHED NOTEBOOKS MOST UNDER \$1000 !!

COMPAQ ARMADA 7400	\$ 959.99	PII-366 / 128M / 10.0G / DVD / 56K / 14.1" TFT
COMPAQ ARMADA M700	\$ 1,279.99	PIII 500 / 128M / 12.0G / DVD / 56K / eNet / 14.1" TFT
DELL LAT CPI	\$ 859.99	PII-300 / 128M / 4.8G / CDROM / 13.3" TFT
DELL LAT CFI	\$ 929.99	PII-366 / 128M / 6.0G / CDROM / 13.3" TFT
HP OMNIBOOK 4100	\$ 759.99	PII-266 / 64M / 4.0G / CDROM / 14.1" TFT
IBM ThinkPad 380Z	\$ 699.99	PII-233 / 64M / 4.0G / CDROM / 13.3" TFT
IBM DVD ThinkPad 600E	\$ 919.99	PII-366 / 128M / 5.0G / DVD / 56K / 13.3" TFT
Micro TRANSPORT XKE	\$ 449.99	P-166 / 32M / 2.1G / CDROM / 33.6K / 12.1" TFT
TOSHIBA SATE Pro	\$ 449.99	P-166 / 32M / 2.1G / CDROM / 33.6K / 12.1" TFT
TOSHIBA SAT 4020CDT	\$ 859.99	PII-300 / 64M / 4.4G / CDROM / 13.3" TFT

BRAND NEW NOTEBOOK

ASUS L3851 \$ 2699.00 P4-1.8G / 2560DDR / 20G / DVD & CDRW / 56K / eNet / 15" SXGA TFT

Systems from
\$399.99
(Color Monitor incl.)
Limited warranty,
please ask for details.



**HP Monitor
Pavilion 150
15" LCD
w/ digital
\$549.99**

Gateway 750 \$649.99 P4 1.5 \$909.99

CPU: Athlon 700MHz / P4 / 5G Intel 5568 onboard
SRAM: 128MB / 128MB
HDD: 20GB / 30GB
CDRW: 52X/48X / 24X/48X
DVD: 16X/48X / No
VGA: TNT2 M4 32M / GeForce2 320 32M
SOUND: SB PCI 1280 / on board
MODEM: 56K V90 / 56K V90
NET CARD: No / 10/100
MONITOR: 17" color / 17" color
SOFTWARE: WIN 98 SE / WIN XP Home

- All refurbished systems include:
- Micro ATX Case • 1 40MB Floppy
 - Speaker • 54K Fax/Modem
 - PS2 Keyboard • Windows OS Original CD
 - PS2 Mouse • One Year Parts & Labor Warranty
 - Limited Warranty for 15" LCD

PALM

PALM INC \$199.95
PALM M100 \$99.95
PALM M505 \$279.95



- All prices and products availability subject to change without prior notice.
- All product names or registered trademarks are properties of their respective owners.
- Not responsible for typographical errors.
- Limited Warranty for all refurbished notebooks & printers, please call for details.

Long lenses

Continued from page 50
a dedicated button. You can always use the focus lock, but you need to hold the shutter button down twice halfway, which requires a subtle touch. That 380-mm telephoto really pulls things in close, so having a manual override is quite important to reduce shutter lag. But for static scenes, this is not an issue and you can really enjoy the long lens.

Cybernet DSC-777

From: Sony of Canada, www.sony.ca

Price: \$150

How easy to use with good user interface
Innovative features

Can't forget Memory Stick is OK, but, which will extend the number of high resolution TIFFs you can take before you need to download



As with the Dimage, I was initially a bit put off by the DSC-777's design, but ended up appreciating all the features. Super packed into this unit, it looks unbalanced, and it is—plus the short body makes the hanging feel too small—however, this is a little consequence when you actually start using the camera. It encourages you to rest the big lens behind the eye upturned palm of your

WWW.

TCP. The official Web site of the CAPTURA (Completely Automated Picture Taking Tool to tell Computers and Humans Apart) Project, based at the School of Computer Science at Carnegie Mellon University. CAPTURA are programs designed to generate tools that assist human can pass, but that current computer systems can't pass. They could be used to prevent computer programs from automatically signing up for email accounts or visiting Web pages for search engines, for example, if the site owner wanted the page to remain private. Visitors can try out sample tests on the Web.

www.capture.net

TCP Lab: (Hi)Lo Camera Survey

Model/Manufacturer	1-meg 1800 Type III	1-meg 5M2 Type III	Photoflex 1950 Type III	Image 38 Type III	Cosita 5000 Type III	Cybernet 750 Type III
Effective res. megapixels	5.24	5.1	4.1	4.05	5	5
Max. image size (pixels)	2,048x1,536	2,048x1,536*	2,073x1,571	2,048x1,536	2,048x1,536	2,048x1,536
Image file format	RAW, JPEG	RAW, JPEG	RAW, JPEG	RAW, JPEG	RAW, JPEG	RAW, JPEG
Optical zoom range	6x	6x	7x	7x	8x	8x
35-mm equiv. focal length	35 to 210 mm	35 to 210 mm	37 to 250 mm	35 to 250 mm	35 to 250 mm	35 to 250 mm
Closest focus	10 cm	10 cm	10 cm	10 cm	10 cm	10 cm
Image format	4:3	4:3	4:3	4:3	4:3	4:3
Storage format	16 MB, 32 MB	16 MB, 32 MB	16 MB, 32 MB	16 MB, 32 MB	16 MB, 32 MB	16 MB, 32 MB
Card loaded	yes	yes	yes	yes	yes	yes
Viewfinder	optical	optical	optical	optical	optical	optical
Flash	yes	yes	yes	yes	yes	yes
Video capability	yes	yes	yes	yes	yes	yes
Shutter speed range (s)	1/30 to 1/2000	1/30 to 1/2000	1/30 to 1/2000	1/30 to 1/2000	1/30 to 1/2000	1/30 to 1/2000
Auto menu function	yes	yes	yes	yes	yes	yes
Batteries	AA (3)	AA (3)	AA (3)	AA (3)	AA (3)	AA (3)
Dimensions (mm)	120x60x30	120x60x30	120x60x30	120x60x30	120x60x30	120x60x30
Weight (g)	180 (11.4)	180 (11.4)	180 (11.4)	180 (11.4)	180 (11.4)	180 (11.4)
Max. price**	\$130	\$130	\$130	\$130	\$130	\$130

*The Kodak 5000 and Cybernet C750 costs in dollars range from the number of pixels in the view

**Lowest price: as listed in advertising flyers in Canadian media (see www.tcp-lab.com) as of mid-October 2002, rounded to the nearest dollar

left hand, and once at that position, everything seems to fall easily into place. The articulated body allows you to hold the camera above or below eye level and still have a clear view of the LCD on the back.

The menu control is a jog switch that combines the functions of a rotating three-wheel and a button switch. Spin the wheel to highlight one of several available menu items, for example exposure compensation, then push down on the wheel to activate that function. This brings up the relevant sub-menu—the exposure compensation gauge is that one. You spin the wheel one way or the other to dial in the compensation, then push the wheel down again to make the selection. I found it took me no time to get used to this quick navigation—its simple and gives you control over a large number of functions using just one wheel that the menu system uses white letters that turn yellow when highlighted. These two colours are sometimes hard to discriminate, especially under bright conditions. We would have preferred more contrast, say, reversing the sun on the active selection, or using a colour like blue or green.

TCP Lab: Tele-extenders

Some manufacturers and third-party filter makers, like Tiffen, offer auxiliary lenses for some models. These typically screw onto the camera's existing lens system using a separate extension tube, and extend the reach of the existing telephoto by one and a half to five times.

I've been using a 1.5x tele-extender on my Canon G2 for the past few months, and the results have been a mixed bag. It brings the telephoto up to about 150 mm, which is decent, but most of wide-angle aperture of the main lens is unusable because of serious vignetting—with the tele-extender mounted on the middle third the active image area is a black frame and just a circular portion of the image on the plastic extension tube is starting to wear down, which makes it easy to cross-thread it when attaching it to the camera.

A mechanical annoyance is easy to cross-thread it when attaching it to the camera. Also, even though the auxiliary lens and extension tube are from Canon, and designed for the G2, not much has gone into their assembly: they look cheap compared to the camera. Function over form, I suppose, and it does offer that extra reach when it's essential to move physically closer to a subject.

Adding tele-extenders to the extreme is an interesting subculture of filmmakers using the Canon Coothe's line generation of cameras. Because these cameras have internal zoom mechanisms and a relatively small lens diameter, someone hit on the idea of adapting the eyepiece of a telescope to the Coothe to produce a multi-lens telephoto—and the flip-flop was born.

—David Daniels

Some key controls are on the right of the lens barrel, where your thumb falls when you slide the barrel in your left grip. The zoom control is a two-stage switch—push digitally and the lens slow it speeds in or out. Push all the way and the zoom rate is accelerated. And it's very smooth.

Stay in pushing digital photography

into different directions, and the camera has a few other features. One is Clip Motion, which is intended for Web work. The mode allows you to capture up to 1600x1200-pixel images and save them for use as animated GIFs. Another mode, called Macro Burst, captures 16 consecutive images in a single 1,280x960-pixel frame with a single shutter click. When you play it back in the camera's menu, an action looks like 16 freeze frames. Sony suggests this is a tool for studying your golf or tennis swing. □

Missed an issue? Catch up on Canadian technology news, reviews, and opinions in The Computer Paper archives at:

canada
computes.com

July 1st 1999
11AM-5PM
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)

Monthly Drawing
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)
1217-1221 (1217-1221) (1217-1221)

WORLDWIDE

Richmond VANCOUVER

www.worldwide.bc.ca
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦
世界通電腦公司 世界通電腦 世界通電腦

Please check our sites for current prices and items. WWW.WORLDWIDE.BC.CA Download View our Wash Price List Secondary Price List

Richmond
11811 121st Ave. Richmond, B.C. V6V 3K9
Tel: 604-270-7299
Fax: 604-270-7299
Mon-Fri 9:30-6:00pm
Sat 10:00-5:00pm
Sun 11:00-5:00pm



Vancouver
8888 Victoria Drive, Richmond, B.C. V6X 3P9
Tel: 604-270-7299
Fax: 604-270-7299
Mon-Fri 9:30-6:00pm
Sat 10:00-5:00pm
Sun 11:00-5:00pm

Check current price from
www.worldwide.bc.ca
PC/PS2 1.5 - 1.5GHz
CD-ROM Drive, Keyboard, Mouse, Monitor (Motherboard Video Card)
CPU Memory
System + Bundle
Special Items (Peripherals, Clearance)
Small Items (Mouse, Cable Accessories)
Accessories
Free List: 1.5 - 1.5GHz
Mon-Fri 9:30-6:00pm
Sat 10:00-5:00pm
Sun 11:00-5:00pm

WorldTech AMD Sempron
Sempron 2400 (2.40GHz) \$129
Sempron 2600 (2.60GHz) \$139
Sempron 2800 (2.80GHz) \$149
Sempron 3000 (3.00GHz) \$159
Sempron 3200 (3.20GHz) \$169
Sempron 3400 (3.40GHz) \$179
Sempron 3600 (3.60GHz) \$189
Sempron 3800 (3.80GHz) \$199
Sempron 4000 (4.00GHz) \$209
Sempron 4200 (4.20GHz) \$219
Sempron 4400 (4.40GHz) \$229
Sempron 4600 (4.60GHz) \$239
Sempron 4800 (4.80GHz) \$249
Sempron 5000 (5.00GHz) \$259
Sempron 5200 (5.20GHz) \$269
Sempron 5400 (5.40GHz) \$279
Sempron 5600 (5.60GHz) \$289
Sempron 5800 (5.80GHz) \$299
Sempron 6000 (6.00GHz) \$309
Sempron 6200 (6.20GHz) \$319
Sempron 6400 (6.40GHz) \$329
Sempron 6600 (6.60GHz) \$339
Sempron 6800 (6.80GHz) \$349
Sempron 7000 (7.00GHz) \$359
Sempron 7200 (7.20GHz) \$369
Sempron 7400 (7.40GHz) \$379
Sempron 7600 (7.60GHz) \$389
Sempron 7800 (7.80GHz) \$399
Sempron 8000 (8.00GHz) \$409
Sempron 8200 (8.20GHz) \$419
Sempron 8400 (8.40GHz) \$429
Sempron 8600 (8.60GHz) \$439
Sempron 8800 (8.80GHz) \$449
Sempron 9000 (9.00GHz) \$459
Sempron 9200 (9.20GHz) \$469
Sempron 9400 (9.40GHz) \$479
Sempron 9600 (9.60GHz) \$489
Sempron 9800 (9.80GHz) \$499
Sempron 10000 (10.00GHz) \$509
Sempron 10200 (10.20GHz) \$519
Sempron 10400 (10.40GHz) \$529
Sempron 10600 (10.60GHz) \$539
Sempron 10800 (10.80GHz) \$549
Sempron 11000 (11.00GHz) \$559
Sempron 11200 (11.20GHz) \$569
Sempron 11400 (11.40GHz) \$579
Sempron 11600 (11.60GHz) \$589
Sempron 11800 (11.80GHz) \$599
Sempron 12000 (12.00GHz) \$609
Sempron 12200 (12.20GHz) \$619
Sempron 12400 (12.40GHz) \$629
Sempron 12600 (12.60GHz) \$639
Sempron 12800 (12.80GHz) \$649
Sempron 13000 (13.00GHz) \$659
Sempron 13200 (13.20GHz) \$669
Sempron 13400 (13.40GHz) \$679
Sempron 13600 (13.60GHz) \$689
Sempron 13800 (13.80GHz) \$699
Sempron 14000 (14.00GHz) \$709
Sempron 14200 (14.20GHz) \$719
Sempron 14400 (14.40GHz) \$729
Sempron 14600 (14.60GHz) \$739
Sempron 14800 (14.80GHz) \$749
Sempron 15000 (15.00GHz) \$759
Sempron 15200 (15.20GHz) \$769
Sempron 15400 (15.40GHz) \$779
Sempron 15600 (15.60GHz) \$789
Sempron 15800 (15.80GHz) \$799
Sempron 16000 (16.00GHz) \$809
Sempron 16200 (16.20GHz) \$819
Sempron 16400 (16.40GHz) \$829
Sempron 16600 (16.60GHz) \$839
Sempron 16800 (16.80GHz) \$849
Sempron 17000 (17.00GHz) \$859
Sempron 17200 (17.20GHz) \$869
Sempron 17400 (17.40GHz) \$879
Sempron 17600 (17.60GHz) \$889
Sempron 17800 (17.80GHz) \$899
Sempron 18000 (18.00GHz) \$909
Sempron 18200 (18.20GHz) \$919
Sempron 18400 (18.40GHz) \$929
Sempron 18600 (18.60GHz) \$939
Sempron 18800 (18.80GHz) \$949
Sempron 19000 (19.00GHz) \$959
Sempron 19200 (19.20GHz) \$969
Sempron 19400 (19.40GHz) \$979
Sempron 19600 (19.60GHz) \$989
Sempron 19800 (19.80GHz) \$999
Sempron 20000 (20.00GHz) \$1009
Sempron 20200 (20.20GHz) \$1019
Sempron 20400 (20.40GHz) \$1029
Sempron 20600 (20.60GHz) \$1039
Sempron 20800 (20.80GHz) \$1049
Sempron 21000 (21.00GHz) \$1059
Sempron 21200 (21.20GHz) \$1069
Sempron 21400 (21.40GHz) \$1079
Sempron 21600 (21.60GHz) \$1089
Sempron 21800 (21.80GHz) \$1099
Sempron 22000 (22.00GHz) \$1109
Sempron 22200 (22.20GHz) \$1119
Sempron 22400 (22.40GHz) \$1129
Sempron 22600 (22.60GHz) \$1139
Sempron 22800 (22.80GHz) \$1149
Sempron 23000 (23.00GHz) \$1159
Sempron 23200 (23.20GHz) \$1169
Sempron 23400 (23.40GHz) \$1179
Sempron 23600 (23.60GHz) \$1189
Sempron 23800 (23.80GHz) \$1199
Sempron 24000 (24.00GHz) \$1209
Sempron 24200 (24.20GHz) \$1219
Sempron 24400 (24.40GHz) \$1229
Sempron 24600 (24.60GHz) \$1239
Sempron 24800 (24.80GHz) \$1249
Sempron 25000 (25.00GHz) \$1259
Sempron 25200 (25.20GHz) \$1269
Sempron 25400 (25.40GHz) \$1279
Sempron 25600 (25.60GHz) \$1289
Sempron 25800 (25.80GHz) \$1299
Sempron 26000 (26.00GHz) \$1309
Sempron 26200 (26.20GHz) \$1319
Sempron 26400 (26.40GHz) \$1329
Sempron 26600 (26.60GHz) \$1339
Sempron 26800 (26.80GHz) \$1349
Sempron 27000 (27.00GHz) \$1359
Sempron 27200 (27.20GHz) \$1369
Sempron 27400 (27.40GHz) \$1379
Sempron 27600 (27.60GHz) \$1389
Sempron 27800 (27.80GHz) \$1399
Sempron 28000 (28.00GHz) \$1409
Sempron 28200 (28.20GHz) \$1419
Sempron 28400 (28.40GHz) \$1429
Sempron 28600 (28.60GHz) \$1439
Sempron 28800 (28.80GHz) \$1449
Sempron 29000 (29.00GHz) \$1459
Sempron 29200 (29.20GHz) \$1469
Sempron 29400 (29.40GHz) \$1479
Sempron 29600 (29.60GHz) \$1489
Sempron 29800 (29.80GHz) \$1499
Sempron 30000 (30.00GHz) \$1509
Sempron 30200 (30.20GHz) \$1519
Sempron 30400 (30.40GHz) \$1529
Sempron 30600 (30.60GHz) \$1539
Sempron 30800 (30.80GHz) \$1549
Sempron 31000 (31.00GHz) \$1559
Sempron 31200 (31.20GHz) \$1569
Sempron 31400 (31.40GHz) \$1579
Sempron 31600 (31.60GHz) \$1589
Sempron 31800 (31.80GHz) \$1599
Sempron 32000 (32.00GHz) \$1609
Sempron 32200 (32.20GHz) \$1619
Sempron 32400 (32.40GHz) \$1629
Sempron 32600 (32.60GHz) \$1639
Sempron 32800 (32.80GHz) \$1649
Sempron 33000 (33.00GHz) \$1659
Sempron 33200 (33.20GHz) \$1669
Sempron 33400 (33.40GHz) \$1679
Sempron 33600 (33.60GHz) \$1689
Sempron 33800 (33.80GHz) \$1699
Sempron 34000 (34.00GHz) \$1709
Sempron 34200 (34.20GHz) \$1719
Sempron 34400 (34.40GHz) \$1729
Sempron 34600 (34.60GHz) \$1739
Sempron 34800 (34.80GHz) \$1749
Sempron 35000 (35.00GHz) \$1759
Sempron 35200 (35.20GHz) \$1769
Sempron 35400 (35.40GHz) \$1779
Sempron 35600 (35.60GHz) \$1789
Sempron 35800 (35.80GHz) \$1799
Sempron 36000 (36.00GHz) \$1809
Sempron 36200 (36.20GHz) \$1819
Sempron 36400 (36.40GHz) \$1829
Sempron 36600 (36.60GHz) \$1839
Sempron 36800 (36.80GHz) \$1849
Sempron 37000 (37.00GHz) \$1859
Sempron 37200 (37.20GHz) \$1869
Sempron 37400 (37.40GHz) \$1879
Sempron 37600 (37.60GHz) \$1889
Sempron 37800 (37.80GHz) \$1899
Sempron 38000 (38.00GHz) \$1909
Sempron 38200 (38.20GHz) \$1919
Sempron 38400 (38.40GHz) \$1929
Sempron 38600 (38.60GHz) \$1939
Sempron 38800 (38.80GHz) \$1949
Sempron 39000 (39.00GHz) \$1959
Sempron 39200 (39.20GHz) \$1969
Sempron 39400 (39.40GHz) \$1979
Sempron 39600 (39.60GHz) \$1989
Sempron 39800 (39.80GHz) \$1999
Sempron 40000 (40.00GHz) \$2009
Sempron 40200 (40.20GHz) \$2019
Sempron 40400 (40.40GHz) \$2029
Sempron 40600 (40.60GHz) \$2039
Sempron 40800 (40.80GHz) \$2049
Sempron 41000 (41.00GHz) \$2059
Sempron 41200 (41.20GHz) \$2069
Sempron 41400 (41.40GHz) \$2079
Sempron 41600 (41.60GHz) \$2089
Sempron 41800 (41.80GHz) \$2099
Sempron 42000 (42.00GHz) \$2109
Sempron 42200 (42.20GHz) \$2119
Sempron 42400 (42.40GHz) \$2129
Sempron 42600 (42.60GHz) \$2139
Sempron 42800 (42.80GHz) \$2149
Sempron 43000 (43.00GHz) \$2159
Sempron 43200 (43.20GHz) \$2169
Sempron 43400 (43.40GHz) \$2179
Sempron 43600 (43.60GHz) \$2189
Sempron 43800 (43.80GHz) \$2199
Sempron 44000 (44.00GHz) \$2209
Sempron 44200 (44.20GHz) \$2219
Sempron 44400 (44.40GHz) \$2229
Sempron 44600 (44.60GHz) \$2239
Sempron 44800 (44.80GHz) \$2249
Sempron 45000 (45.00GHz) \$2259
Sempron 45200 (45.20GHz) \$2269
Sempron 45400 (45.40GHz) \$2279
Sempron 45600 (45.60GHz) \$2289
Sempron 45800 (45.80GHz) \$2299
Sempron 46000 (46.00GHz) \$2309
Sempron 46200 (46.20GHz) \$2319
Sempron 46400 (46.40GHz) \$2329
Sempron 46600 (46.60GHz) \$2339
Sempron 46800 (46.80GHz) \$2349
Sempron 47000 (47.00GHz) \$2359
Sempron 47200 (47.20GHz) \$2369
Sempron 47400 (47.40GHz) \$2379
Sempron 47600 (47.60GHz) \$2389
Sempron 47800 (47.80GHz) \$2399
Sempron 48000 (48.00GHz) \$2409
Sempron 48200 (48.20GHz) \$2419
Sempron 48400 (48.40GHz) \$2429
Sempron 48600 (48.60GHz) \$2439
Sempron 48800 (48.80GHz) \$2449
Sempron 49000 (49.00GHz) \$2459
Sempron 49200 (49.20GHz) \$2469
Sempron 49400 (49.40GHz) \$2479
Sempron 49600 (49.60GHz) \$2489
Sempron 49800 (49.80GHz) \$2499
Sempron 50000 (50.00GHz) \$2509
Sempron 50200 (50.20GHz) \$2519
Sempron 50400 (50.40GHz) \$2529
Sempron 50600 (50.60GHz) \$2539
Sempron 50800 (50.80GHz) \$2549
Sempron 51000 (51.00GHz) \$2559
Sempron 51200 (51.20GHz) \$2569
Sempron 51400 (51.40GHz) \$2579
Sempron 51600 (51.60GHz) \$2589
Sempron 51800 (51.80GHz) \$2599
Sempron 52000 (52.00GHz) \$2609
Sempron 52200 (52.20GHz) \$2619
Sempron 52400 (52.40GHz) \$2629
Sempron 52600 (52.60GHz) \$2639
Sempron 52800 (52.80GHz) \$2649
Sempron 53000 (53.00GHz) \$2659
Sempron 53200 (53.20GHz) \$2669
Sempron 53400 (53.40GHz) \$2679
Sempron 53600 (53.60GHz) \$2689
Sempron 53800 (53.80GHz) \$2699
Sempron 54000 (54.00GHz) \$2709
Sempron 54200 (54.20GHz) \$2719
Sempron 54400 (54.40GHz) \$2729
Sempron 54600 (54.60GHz) \$2739
Sempron 54800 (54.80GHz) \$2749
Sempron 55000 (55.00GHz) \$2759
Sempron 55200 (55.20GHz) \$2769
Sempron 55400 (55.40GHz) \$2779
Sempron 55600 (55.60GHz) \$2789
Sempron 55800 (55.80GHz) \$2799
Sempron 56000 (56.00GHz) \$2809
Sempron 56200 (56.20GHz) \$2819
Sempron 56400 (56.40GHz) \$2829
Sempron 56600 (56.60GHz) \$2839
Sempron 56800 (56.80GHz) \$2849
Sempron 57000 (57.00GHz) \$2859
Sempron 57200 (57.20GHz) \$2869
Sempron 57400 (57.40GHz) \$2879
Sempron 57600 (57.60GHz) \$2889
Sempron 57800 (57.80GHz) \$2899
Sempron 58000 (58.00GHz) \$2909
Sempron 58200 (58.20GHz) \$2919
Sempron 58400 (58.40GHz) \$2929
Sempron 58600 (58.60GHz) \$2939
Sempron 58800 (58.80GHz) \$2949
Sempron 59000 (59.00GHz) \$2959
Sempron 59200 (59.20GHz) \$2969
Sempron 59400 (59.40GHz) \$2979
Sempron 59600 (59.60GHz) \$2989
Sempron 59800 (59.80GHz) \$2999
Sempron 60000 (60.00GHz) \$3009
Sempron 60200 (60.20GHz) \$3019
Sempron 60400 (60.40GHz) \$3029
Sempron 60600 (60.60GHz) \$3039
Sempron 60800 (60.80GHz) \$3049
Sempron 61000 (61.00GHz) \$3059
Sempron 61200 (61.20GHz) \$3069
Sempron 61400 (61.40GHz) \$3079
Sempron 61600 (61.60GHz) \$3089
Sempron 61800 (61.80GHz) \$3099
Sempron 62000 (62.00GHz) \$3109
Sempron 62200 (62.20GHz) \$3119
Sempron 62400 (62.40GHz) \$3129
Sempron 62600 (62.60GHz) \$3139
Sempron 62800 (62.80GHz) \$3149
Sempron 63000 (63.00GHz) \$3159
Sempron 63200 (63.20GHz) \$3169
Sempron 63400 (63.40GHz) \$3179
Sempron 63600 (63.60GHz) \$3189
Sempron 63800 (63.80GHz) \$3199
Sempron 64000 (64.00GHz) \$3209
Sempron 64200 (64.20GHz) \$3219
Sempron 64400 (64.40GHz) \$3229
Sempron 64600 (64.60GHz) \$3239
Sempron 64800 (64.80GHz) \$3249
Sempron 65000 (65.00GHz) \$3259
Sempron 65200 (65.20GHz) \$3269
Sempron 65400 (65.40GHz) \$3279
Sempron 65600 (65.60GHz) \$3289
Sempron 65800 (65.80GHz) \$3299
Sempron 66000 (66.00GHz) \$3309
Sempron 66200 (66.20GHz) \$3319
Sempron 66400 (66.40GHz) \$3329
Sempron 66600 (66.60GHz) \$3339
Sempron 66800 (66.80GHz) \$3349
Sempron 67000 (67.00GHz) \$3359
Sempron 67200 (67.20GHz) \$3369
Sempron 67400 (67.40GHz) \$3379
Sempron 67600 (67.60GHz) \$3389
Sempron 67800 (67.80GHz) \$3399
Sempron 68000 (68.00GHz) \$3409
Sempron 68200 (68.20GHz) \$3419
Sempron 68400 (68.40GHz) \$3429
Sempron 68600 (68.60GHz) \$3439
Sempron 68800 (68.80GHz) \$3449
Sempron 69000 (69.00GHz) \$3459
Sempron 69200 (69.20GHz) \$3469
Sempron 69400 (69.40GHz) \$3479
Sempron 69600 (69.60GHz) \$3489
Sempron 69800 (69.80GHz) \$3499
Sempron 70000 (70.00GHz) \$3509
Sempron 70200 (70.20GHz) \$3519
Sempron 70400 (70.40GHz) \$3529
Sempron 70600 (70.60GHz) \$3539
Sempron 70800 (70.80GHz) \$3549
Sempron 71000 (71.00GHz) \$3559
Sempron 71200 (71.20GHz) \$3569
Sempron 71400 (71.40GHz) \$3579
Sempron 71600 (71.60GHz) \$3589
Sempron 71800 (71.80GHz) \$3599
Sempron 72000 (72.00GHz) \$3609
Sempron 72200 (72.20GHz) \$3619
Sempron 72400 (72.40GHz) \$3629
Sempron 72600 (72.60GHz) \$3639
Sempron 72800 (72.80GHz) \$3649
Sempron 73000 (73.00GHz) \$3659
Sempron 73200 (73.20GHz) \$3669
Sempron 73400 (73.40GHz) \$3679
Sempron 73600 (73.60GHz) \$3689
Sempron 73800 (73.80GHz) \$3699
Sempron 74000 (74.00GHz) \$3709
Sempron 74200 (74.20GHz) \$3719
Sempron 74400 (74.40GHz) \$3729
Sempron 74600 (74.60GHz) \$3739
Sempron 74800 (74.80GHz) \$3749
Sempron 75000 (75.00GHz) \$3759
Sempron 75200 (75.20GHz) \$3769
Sempron 75400 (75.40GHz) \$3779
Sempron 75600 (75.60GHz) \$3789
Sempron 75800 (75.80GHz) \$3799
Sempron 76000 (76.00GHz) \$3809
Sempron 76200 (76.20GHz) \$3819
Sempron 76400 (76.40GHz) \$3829
Sempron 76600 (76.60GHz) \$3839
Sempron 76800 (76.80GHz) \$3849
Sempron 77000 (77.00GHz) \$3859
Sempron 77200 (77.20GHz) \$3869
Sempron 77400 (77.40GHz) \$3879
Sempron 77600 (77.60GHz) \$3889
Sempron 77800 (77.80GHz) \$3899
Sempron 78000 (78.00GHz) \$3909
Sempron 78200 (78.20GHz) \$3919
Sempron 78400 (78.40GHz) \$3929
Sempron 78600 (78.60GHz) \$3939
Sempron 78800 (78.80GHz) \$3949
Sempron 79000 (79.00GHz) \$3959
Sempron 79200 (79.20GHz) \$3969
Sempron 79400 (79.40GHz) \$3979
Sempron 79600 (79.60GHz) \$3989
Sempron 79800 (79.80GHz) \$3999
Sempron 80000 (80.00GHz) \$4009
Sempron 80200 (80.20GHz) \$4019
Sempron 80400 (80.40GHz) \$4029
Sempron 80600 (80.60GHz) \$4039
Sempron 80800 (80.80GHz) \$4049
Sempron 81000 (81.00GHz) \$4059
Sempron 81200 (81.20GHz) \$4069
Sempron 81400 (81.40GHz) \$4079
Sempron 81600 (81.60GHz) \$4089
Sempron 81800 (81.80GHz) \$4099
Sempron 82000 (82.00GHz) \$4109
Sempron 82200 (82.20GHz) \$4119
Sempron 82400 (82.40GHz) \$4129
Sempron 82600 (82.60GHz) \$4139
Sempron 82800 (82.80GHz) \$4149
Sempron 83000 (83.00GHz) \$4159
Sempron 83200 (83.20GHz) \$4169
Sempron 83400 (83.40GHz) \$4179
Sempron 83600 (83.60GHz) \$4189
Sempron 83800 (83.80GHz) \$4199
Sempron 84000 (84.00GHz) \$4209
Sempron 84200 (84.20GHz) \$4219
Sempron 84400 (84.40GHz) \$4229
Sempron 84600 (84.60GHz) \$4239
Sempron 84800 (84.80GHz) \$4249
Sempron 85000 (85.00GHz) \$4259
Sempron 85200 (85.20GHz) \$4269
Sempron 85400 (85.40GHz) \$4279
Sempron 85600 (85.60GHz) \$4289
Sempron 85800 (85.80GHz) \$4299
Sempron 86000 (86.00GHz) \$4309
Sempron 86200 (86.20GHz) \$4319
Sempron 86400 (86.40GHz) \$4329
Sempron 86600 (86.60GHz) \$4339
Sempron 86800 (86.80GHz) \$4349
Sempron 87000 (87.00GHz) \$4359
Sempron 87200 (87.20GHz) \$4369
Sempron 87400 (87.40GHz) \$4379
Sempron 87600 (87.60GHz) \$4389
Sempron 87800 (87.80GHz) \$4399
Sempron 88000 (88.00GHz) \$4409
Sempron 88200 (88.20GHz) \$4419
Sempron 88400 (88.40GHz) \$4429
Sempron 88600 (88.60GHz) \$4439
Sempron 88800 (88.80GHz) \$4449
Sempron 89000 (89.00GHz) \$4459
Sempron 89200 (89.20GHz) \$4469
Sempron 89400 (89.40GHz) \$4479
Sempron 89600 (89.60GHz) \$4489
Sempron 89800 (89.80GHz) \$4499
Sempron 90000 (90.00GHz) \$4509
Sempron 90200 (90.20GHz) \$4519
Sempron 90400 (90.40GHz) \$4529
Sempron 90600 (90.60GHz) \$4539
Sempron 90800 (90.80GHz) \$4549
Sempron 91000 (91.00GHz) \$4559
Sempron 91200 (91.20GHz) \$4569
Sempron 91400 (91.40GHz) \$4579
Sempron 91600 (91.60GHz) \$4589
Sempron 91800 (91.80GHz) \$4599
Sempron 92000 (92.00GHz) \$4609
Sempron 92200 (92.20GHz) \$4619
Sempron 92400 (92.40GHz) \$4629
Sempron 92600 (92.60GHz) \$4639
Sempron 92800 (92.80GHz) \$4649
Sempron 93000 (93.00GHz) \$4659
Sempron 93200 (93.20GHz) \$4669
Sempron 93400 (93.40GHz) \$4679
Sempron 93600 (93.60GHz) \$4689
Sempron 93800 (93.80GHz) \$4699
Sempron 94000 (94.00GHz) \$4709
Sempron 94200 (94.20GHz) \$4719
Sempron 94400 (94.40GHz) \$4729
Sempron 94600 (94.60GHz) \$4739
Sempron 94800 (94.80GHz) \$4749
Sempron 95000 (95.00GHz) \$4759
Sempron 95200 (95.20GHz) \$4769
Sempron 95400 (95.40GHz) \$4779
Sempron 95600 (95.60GHz) \$4789
Sempron 95800 (95.80GHz) \$4799
Sempron 96000 (96.00GHz) \$4809
Sempron 96200 (96.20GHz) \$4819
Sempron 96400 (96.40GHz) \$4829
Sempron 96600 (96.60GHz) \$4839
Sempron 96800 (96.80GHz) \$4849
Sempron 97000 (97.00GHz) \$4859
Sempron 97200 (97.20GHz) \$4869
Sempron 97400 (97.40GHz) \$4879
Sempron 97600 (9

Web accessibility hits the mainstream

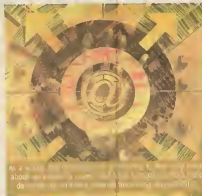
By Todd Coopes and Jeff Horne

Despite the ubiquitous nature of the Internet and wholesale advances in technology, the World Wide Web still represents a barrier for people with disabilities.

Numerous studies have shown that at least 10 percent of the online community uses assistive technologies to access the Internet, while at the same time 95 to 99 percent of all Web sites are functionally inaccessible to the visually, hearing, and/or mobility impaired.

From a business perspective, the statistics are even more compelling: consumers with disabilities have an estimated US\$175 billion in discretionary income. This is a classically underserved online audience with immense buying power.

In addition to a positive potential impact on the bottom line, developing or redeveloping an online presence to meet accessibility standards offers a variety of other benefits. Freedom is that accessible Web sites are much better for viewing in alternative formats, as their content is more easily converted into other Internet protocols, such as WAP. In this case, an organization could well opt out access to online information from non-PC-based user agents, such as PDAs and cell phones, at a much faster pace and at a much lower cost.



AS A WEB SITE, YOU HAVE ABOUT A 95 PERCENT CHANCE OF BEING ACCESSIBLE TO VISUALLY IMPAIRED PEOPLE.

Accessibility also goes hand-in-hand with creating a positive customer experience. Research shows that accessible Web sites generate more repeat visits from users than their inaccessible counterparts. As a whole, the disabled user com-

munity is also very vocal about accessibility issues, and loyal to organizations that demonstrate an effort towards improving accessibility—giving credence to the old adage that the best (and cheapest) form of advertising is word of

mouth.

Finally, in a credible Web site can help reduce an organization's legal liability. South of the border, the passage of the American Disabilities Act (ADA) in 1990 has resulted in a number of high-profile lawsuits against multi-national corporations that have a Canadian presence. In 1999, the National Federation of the Blind sued America Online, forcing it to make its integrated Web browser compatible with mainstream adaptive technology. Similar lawsuits were initiated against Intel and IBM. While many experts feel that it is only a matter of time until Internet accessibility is universally mandated in the private sector on a global basis.

Assistive technologies

So, what exactly makes a Web site inaccessible? Common accessibility problems include:

- images without ALT/Alt text
- uncaptioned audio
- video without textual content
- pages with poor colour contrast
- improper use of structural elements (like HTML tables) on a page
- and/or the lack of an alternative for users who are incapable of executing specialized scripts or accessing frames

Typically, a combination of these factors can make even the most common

Continued on page 66

Lynx Communications

A Division of GlobalNet Inc.

Serve You On-line isp.lynx.net

1 Month FREE for 12-Month Prepaid Account!

DIAL-UP personal

NOW with FREE Email to Fax & Auto-Responder!!!

- 50 Hours Access Anytime
- Email & Webmail Access
- Personal Web Space
- Usage Check
- Anti-Virus System
- Junk Mail Filter

\$10 /month

Unlimited Dial-up & ADSL Packages also Available!!!

Dial-up Package Resellers Welcome, Call for Details!

Address: 621 - 625 West Broadway, Vancouver, B.C. Canada V6Z 4K6 Email Address: info@lynx.net

Web Hosting Packages:

- FrontPage 50/2000 / FTP Upload
- 20MB Web Space Storage
- 5 POP Email Accounts
- CGI-BIN Capability
- Auto-Responder
- Web Counter

\$15 /month

Windows 2000, MS-DOS, 9x/98 Server ASP, PHP/Perl/SQL, Support, 24/7/365 Online Backup, Virus, Trojan, Rootkit

SIGN UP

isp.lynx.net

604.638.1818

Web accessibility hits the mainstream

Continued from page 61

Web links, file uploads, searching, and purchasing goods and services. Much more challenging or even impossible for someone with a disability to carry out.

The best way to get a handle on accessibility is to understand the tools and techniques used by the disabled community to render and view Web content. Some of the tools include:

- alternative keyboards and input devices;
- Braille displays;
- screen magnifiers;
- voice browsers;
- text browsers;
- screen readers;
- and captioning software.

A majority of these tools are implemented in software or integrated directly into operating systems, while others combine software with specialized hardware to achieve desired results.

Visually impaired users

Due to the graphical nature of the Web, people with visual disabilities are often the largest group of Web site visitors with potential accessibility issues. A visually impaired person may have limited vision, be completely blind, or suffer from colour blindness. To access online information, people with reduced vision often employ screen magnification software to magnify the visible area of a Web page up to 30 times its original size. Most operating systems provide some type of integrated magnification utility.

Like the Magnifier application included with Microsoft Windows 2000, for example.

Legally blind users, on the other hand, employ screen reader software applications that literally read pages through the use of a synthetic voice. Freedom Scientific's Jaws (www.freedomsonline.com) JAWS for Windows is a leading screen reader. In addition to its internal speech synthesizer, JAWS also supports to removable Braille displays—giving the visually impaired another browsing option. Pricing for JAWS begins at US\$199 for the standard edition and US\$1,195 for the professional edition.

Hearing-impaired users

The increased use of sound, video plug-ins and multimedia programs, such as Macromedia Flash, on the Internet has the greatest effect on people with hearing impairments. A hearing-impaired person relies heavily on visual cues to navigate the Web successfully. This reliance requires that any audio content—like video or audio clips of television broadcasts—provide synchronized captions and/or transcripts of the audio portion of the content. All three of the popular streaming media players (Microsoft Windows Media Player, RealNetworks RealPlayer, and Apple QuickTime Player) provide built-in captioning support for the deaf.

To aid content providers with the task of providing caption and audio descriptions of rich media content, the CPB/WGBH National Center for

Accessible Media (NCAM) has produced the Media Access Generator (MAGen) utility. Running under Windows and Mac OS X, MAGen is free to download (<http://www.accessiblemedia.com>) and provides support for Apple's QuickTime, the World Wide Web Consortium's (W3C's) Synchronized Multimedia Integration Language (SMIL), and Microsoft's Synchronized Accessible Media Interchange (SAMI) format.

Physically impaired users

Finally, the sheer amount of content and the ability to provide linkages across multiple Web sites poses a variety of potential problems for people with physical impairments. Depending on the severity of their handicap, a physically impaired person may rely on speech-recognition applications, head-pointing devices, switch sticks, and related devices to mimic a traditional mouse and keyboard setup of a PC.

Dragon NaturallySpeaking (www.naturallyspeaking.com) is the leading speech recognition software on the market today. Dragon NaturallySpeaking offers a built-in vocabulary of more than 250,000 standard and business terms and runs on Windows-based PCs with minimal hardware requirements. Pricing for Dragon NaturallySpeaking starts at US\$199 for the Preferred edition.

Getting started

Accessibility principles can be applied to

all levels of Web site development—from site architecture and content organization to interface design to technical development and implementation—with minimal impact on project resources and timelines. For this reason, working accessibility options into the planning phase of a new Web project makes good business sense and will eliminate the need for costly changes once the site is launched.

For existing Web sites, an efficient first step is to identify problem areas in accessibility by using any number of online validation tools and/or commercial software. The W3C provides an online listing of accessibility tools at www.kit.org/WAI/technologies.htm. Armed with this information, it makes the best sense to focus on remediating Web pages that receive the highest amount of traffic while at the same time developing a long-term plan to correct the remaining pages.

Next issue

The second part of this article will take a more in-depth look at applying some of the accessibility principles outlined by the W3C to Web pages, as well as show case some popular Web sites with varying degrees of support for accessibility standards. □

Joel Cooper and Jeff Meene, principal at Industrial Media Inc. (www.industrialmedia.ca), specialize in making online presence for organizations in public, private, and not-for-profit sectors. They can be reached at jcooper@industrialmedia.ca and jmeene@industrialmedia.ca.

W3C standards and Canadian look and feel guidelines

A major proponent of universal access to information on the Web is the World Wide Web Consortium (W3C), an international, vendor-neutral consortium consisting of more than 400 members that promote the growth and interoperability of the Web. The lack of formal accessibility guidelines for Web developers and designers spurred the W3C to develop the Web Accessibility Initiative (WAI), giving them the task of focusing on Web accessibility in five areas: technology, guidelines, tools, education and outreach, and research and development.

The WAI released an initial set of Web Content Accessibility Guidelines (www.w3.org/WAI/CC/WD) in May 2000. The specification contains 14 guidelines that provide general principles of

accessible Web page design and corresponding "check-points" that outline how to implement the guidelines in HTML. Guideline 1, for example, states the necessity to "provide equivalent alternatives to auditory and visual content." This means text equivalents are available to users who cannot view images or hear audio.

In addition to the specification, the WAI also drafted an accessibility checklist to serve as a tool to review Web sites. Checklist items are broken down into one of three priorities, based on their overall impact on accessibility. The checklist is comprised of 17 high-priority, 33 medium-priority, and 36 lower-priority rules.

The complete specifications and accompanying check lists are available on the W3C Web site at: www.w3.org/WAI/CC/WD.

Version 2.0 of WAI's Web Content Accessibility Guidelines is currently in working draft format. Currently, no release date for the updated guidelines has been set.

A Canadian perspective

In Canada, the federal government's Web sites are leading the accessibility charge. Leveraging the recommendations of the WAI, the Treasury Board of Canada Secretariat approved the Common Look and Feel (CLIFF) Standards and Guidelines (www.cds.ca/CLIFF/) for Government of Canada Internet sites in May 2000.

These guidelines were designed to make any federal government Web site accessible to anyone with a computer that has access to the Internet.

All Federal Web sites are slated to conform to CLIFF standards by the end of December 2002.

Canadian private-sector companies are also getting into the accessibility act. Ottawa-based Watchfire Corp. (www.watchfire.com), a developer of Web site management solutions, recently acquired Bobby—a popular online tool for measuring accessibility—from the Center for Applied Special Technology (CAST). Bobby is slated to be integrated into Watchfire's Web site management platform and WebSite, its Web site testing tool for Web developers. Bobby is one of many commercial and freeware software applications available for gauging the accessibility of a Web site.

—Joel Cooper and Jeff Meene

MULTIMEDIA TECHNOLOGIES

872-0400 2560 Granville St. Vancouver, BC V6H 3G9 Canada Tel: 604-681-5800 Fax: 604-681-5801
www.softwarebc.com info@softwarebc.com

Productivity

[illegible]

Education

[illegible]

PC Games

[illegible]

It's in Stock.

We are committed to helping people on silver-lined products.

▼ Board Games (59-515) ▲



CSP Computer

800-439-9100 Fax: 604-439-9180

Business Hours: Mon-Fri 10:00am-7:00pm Sat 10:00am-6:00pm Sun 12:00pm-6:00pm

COMPUTER SYSTEMS
www.cspcomputer.ca E-Mail: csp@cspcomputer.ca



→ FREE DELIVERY →
→ LEASING & FINANCING →
→ ARE AVAILABLE →
→ OFFICE & HOME NETWORKING →
→ COMPUTER UPGRADES & SERVICE →
→ CALL FOR OUTSIDE DIST. QUOTATION →
免費送貨及安裝

Now our Online Store is open 24 Hrs. Please visit our Website www.cspcomputer.ca for Daily Special Prices

Monthly Special System
Quran 1200 \$339 (All Tax Inc)

- 650 MHz Processor
- 256MB PC100 SDRAM
- ATX333 3000 UDMA Hard Drive
- 56K 1.5M Fax Modem
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color / 15.4" Flat Panel
- Audio: 96000 Hz Full Channel L/R
- Integrated 256K 3D Sound / 100W Sps
- Windows 95/98 / NT4.0 / XP
- 10" 2000W Case w/ Cooling System

Also in stock: 256MB RAM \$119/99
17" Monitor \$145 C20470 - \$119/99
15.5" LCD monitor

Durham: 1.3 / 3M / 1.2 / 2.0 Gbps
\$489 / \$202 / \$407 / \$499

Office Assistant
Most Reliable & Dependable

- 200MHz Processor
- 64MB PC100 SDRAM
- 40GB 3000 UDMA Hard Drive
- 56K Fax Modem
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color / 15.4" Flat Panel
- Audio: 96000 Hz Full Channel L/R
- Integrated 256K 3D Sound / 100W Sps
- Windows 95/98 / NT4.0 / XP
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Power Station
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Power Station
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Power Station
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

SYSTEM UPGRADES OFFERS
→ Windows 95/98 / XP \$199 C20300-49
→ Windows 95/98 / XP \$199 C20300-49

• Offer On-site Service to Residential and Corporate at \$40/hr.
• We Provide In-store Service at 3550hr. Price Estimate.

• Offer On-site Service to Residential and Corporate at \$40/hr.
• We Provide In-store Service at 3550hr. Price Estimate.

• Offer On-site Service to Residential and Corporate at \$40/hr.
• We Provide In-store Service at 3550hr. Price Estimate.

• Offer On-site Service to Residential and Corporate at \$40/hr.
• We Provide In-store Service at 3550hr. Price Estimate.

MMX 233, 2666
Centennial Anniversary Day
Special Upgrade \$169

- 233MHz PIII Processor
- 64MB PC100 SDRAM
- 40GB 3000 UDMA Hard Drive
- 56K Fax Modem
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color / 15.4" Flat Panel
- Audio: 96000 Hz Full Channel L/R
- Integrated 256K 3D Sound / 100W Sps
- Windows 95/98 / NT4.0 / XP
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

MONTHLY SPECIALS

Q3 2000
Special Upgrade \$169

- 233MHz PIII Processor
- 64MB PC100 SDRAM
- 40GB 3000 UDMA Hard Drive
- 56K Fax Modem
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color / 15.4" Flat Panel
- Audio: 96000 Hz Full Channel L/R
- Integrated 256K 3D Sound / 100W Sps
- Windows 95/98 / NT4.0 / XP
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Super Action
Most Powerful & Dependable

- 400MHz PIII S/PD Processor
- 128MB SDRAM
- 80GB 7200rpm Hard Drive
- Integrated 128MB SDRAM AGP
- 15.5" LCD Color
- 56K Fax Modem
- ATX333 3000 UDMA Hard Drive
- 144 Floppy Drive
- 15.5" LCD Color / 15.4" Flat Panel
- Integrated Keyboard / Virtual Mouse
- 10" 2000W Case w/ Cooling System

PC: Celeron 3.2 / 1.3 / 2.0 Gbps
\$429 / \$189 / \$209

PC: 1.6 / 1.3 / 1.8 / 2.0 Gbps
\$429 / \$259 / \$359 / \$379

Call for the best prices of other parts not listed. All prices listed are for the lowest possible price. All prices are subject to change without notice or without.

Coalition gears up to battle Canadian media levies

By Christine Walenski

Representatives of the retailers and software manufacturers that comprise the Canadian Coalition for Fair Digital Access (CCFDA at www.ccfda.ca) gathered in Toronto in mid-December to announce a joint campaign to inform consumers of the hidden levies applied to recording media.

When the private copying of music was legalized in December 1999, a charge was imposed on certain computer and electronic products as a result of a proposal made by the Canadian Private Copying Collective (CPC, at www.cpc.ca), a collective of recording companies, publishers and performers. The proposal was passed and made part of the federal Copyright Act. The levy is currently applied to audio cassettes, recordable and re-writable data and audio CDs, and mini discs.

The CCFDA is asking that the federal government repeal the law that created

Levy (how leevy?)	
Approximate retail price of	
100-track blank CD-Rs before levy	\$29
Current levy per 100-track blank CD-Rs	\$2
CPC's proposed levy per	
100-track blank CD-Rs	\$24
Levy on existing levy	\$11.94
If approved, approximate retail price of 100-track blank CD-Rs (plus tax)	\$43.94

Source: CCFDA website

the original levy. In addition, it wants the Copyright Board of Canada (www.crb.gc.ca) to deny a new CPC proposal, which is scheduled for review beginning Jan. 21.

That proposal, announced in March 2002, seeks to increase the cost of the current levy and broaden its scope to include items like MP3 players, blank DVDs, and flash memory cards.

The CCFDA says the new levy would also be applied to digital cameras and PDAs—regardless of whether or not these items are used for copying music.

Paul Trupane, president and chief executive of Hewlett-Packard Canada (hewlett.ca), says that even the current levy costs too wide a net.

"Fewer than half of blank CDs are used to copy music," Trupane said. "Those who do not copy music actually subsidize those who do."

According to the CCFDA, a 100-pack of blank CDs currently includes a \$21 levy or its \$50 price tag. If the new proposal is approved, the levy could be as high as \$58, creating an \$88 retail price tag for the CDs before tax.

The CCFDA says that other consequences of the passing of the new levy may include a decrease in the number of emerging technologies in Canada as a result of software and hardware manufacturers' reluctance to develop products for an unstable market, the development of a black market, and an increase in cross-border U.S. shopping.

The U.S. equivalent of the levy falls

under the Audio Home Recording Act, established in 1992, which applies a three percent levy to the wholesale price and exempts *only* digital recording media.

The CCFDA says \$28 million in levies have been paid in the past two-and-a-half years, none of which has been dispensed to the copyright holders entitled to it.

The coalition's campaign will take the form of in-store signs posted by participating retailers, Web messages and newsletters, as well as letters on CDs indicating what percentage of the cost is the result of the recording levy (up to 42 percent).

Canadian retailers and software and hardware manufacturers are currently members of the coalition, including Best Buy Canada/Future Shop, Costco Wholesale, Hewlett-Packard Canada, Target Canada, and Staples Business Depot.

—CanadaComputes.com

\$99 a year web hosting

- Free Domain Name
- 500 Megs Storage
- Unlimited Pop 3 Email & More!

featuring

Web Control Panel -
cgi-bin - Log Analysis -
FrontPage Extensions -
Web Mail - Pop 3 Email -
PHP - MySQL - Perl -
Python - ASP - friendly
support and more!

30 day
MONEY BACK
GUARANTEE
99.9%
UPTIME

Get our fully loaded
Agent 99 Web Hosting
Plan Today! Call us at
1.866.993.4678 or
visit us at
www.xlinternet.com
to find out more!

INTERNET

1.866.9WE HOST (1.866.993.4678)
<http://www.xlinternet.com>

ALL PRICES QUOTED IN U.S. NEW ACCOUNTS SUBJECT TO \$25 SETUP FEE. SETUP FEE WAIVED IF TRANSFERRING ACCOUNT

Slim IceKey, Samsung widescreen LCD welcome add-ons for any Mac



This column is being written in late December, so news is slow in the Mac universe as most companies wait anxiously for Macworld Expo San Francisco.

Unfortunately, TDP goes to press just as the event kicks off in early January, so we won't be bringing you news of Santa Jobs' new announcements until our next issue. As usual, Macworld will see the announcement of hundreds of new software and hardware products for the Mac platform, and possibly some new gear from Apple as well. In the meantime, here is some news from the end of 2002.

Samsung unveils new widescreen LCD

Since the release of the 17-inch iMac, many have wondered when a widescreen 17-inch display would be released for Power Macs. Although Apple has not announced one yet, we expect it will be the next six months. In the meantime, Samsung has stepped up to the plate with the 17W6, a Mac OS- and PC-compatible 17-inch widescreen LCD.

Though the 17W6 has a different resolution than the iMac G4 display, its aspect ratio is the same, roughly 16:10. Samsung (www.samsung.com) manufactures the screen. Apple uses it in its Studio Display line, so the 17W6 is similar to the current 17-inch Studio Display, but is slightly shorter and wider. The 17W6 resolution is limited to 1,280x1,024, as opposed to 1,280x1,024 on the current 17-inch Studio Display.

The Mac G4 screen has a higher resolution, resulting in smaller on-screen text, whereas the 17W6 has about the same resolution as the Studio Display. As far as performance, the display sits out of the power pencil with a low refresh of 60 milliseconds or better, as well as 400-to-1 contrast. This should help alleviate the ghosting and muddiness seen on some older LCDs.

The specs aren't quite as good as the Studio Display or iMac G4 display lines, but then this display is aimed more towards consumers than graphics professionals. Having a widescreen LCD would be perfect for watching DVDs or playing games that support widescreen mode. It's also handy for Web browsing since you can have two windows open side by side. However, the

resolution is a bit low for serious photoediting or page layout work.

The 17W6 can connect to your computer via the VGA connector, which gives you an analog connection, or via DVI, which will result in a cleaner digital connection. Digital displays tend to have sharper text, more vibrant colors and better detail overall than their analog counterparts, but it's still nice that Samsung gives the option of both types.

If you have a Mac with AGP built in, you can purchase an AGP-to-DVI adapter for about \$50 to \$60 from several companies, including Be. Right (www.beright.com). The 17W6 is reasonably priced at US\$499, and we expect the street price to be under \$1,000 here. The display was set to ship before the end of December, but we expect it will be mid-January. The Samsung 17W6 features Samsung's standard three-year warranty, which is good for a product in this class. In comparison, the Apple Cinema and Studio displays offer only a one-year warranty (unless purchased with a computer and an Apple Care policy). At press time, Samsung Canada hadn't added the 17W6 to its Web site, but it did have specs for the 17Z1, which is the same model but with a standard aspect screen.

Real Player One final release

After several months in beta, Real Player One (www.real.com) is now final for Mac OS. The OS X-compatible Real One Player is available in paid (final) and free versions. As usual, you may find how to get around the Real Web site to find the free copy, but trust us, it's there.

The Real One player features a much improved interface over Real Player 8 for Mac, and if you're running OS X, Real Player is now much more stable (under Classic or OS 9, Real Player frequently mysteriously locked the Finder or just crashed in the middle of streaming content). The OS X version doesn't appear to have any of these problems, and the final release fully supports OS X 10.2. Although we still find QuickTime to have the best quality for streaming, there will always be content that's only available in Real Video format.

Macally IceKey

The Macally IceKey (www.mally.com/) was first announced several months ago, but we have now seen the Real Units to enter (Cassidy and they are pretty much as cool as we'd hoped.

Available for about \$49, the IceKey is designed to be a perfect match for iBooks, eMac, and iMac. The white plastic key, which is a perfect match with Apple's Power Mac, though there is no more beyond aesthetics that it can't be used with any USB-equipped Mac.

The Apple's Pro model, the IceKey has a standard extended keyboard layout with full-size arrow keys, F1 to F15, plus the volume and media controls and eject key. Apple has added to its newest iMac models. A driver is required for the eject and sound control keys, and both OS 9 and OS X versions come with the included CD (they can also be downloaded from the Macally Web site).

Unlike Apple's standard keyboard, the IceKey uses screen access keys with a very short travel distance, like iBook and iMacBook built-in keyboards. The result is a key feel with well-defined action and a good tactile click with each key press. People who like quiet keyboards may find the IceKey a bit louder than a normal Apple keyboard, but it's not the loudest keyboard out there. It's like using a laptop keyboard on your desk, and has the same firm feel, unlike the spency or soft action of many extended keyboards.

The IceKey is also significantly thinner than a standard desktop keyboard. It is also very light, making it better for traveling or fitting on a keyboard tray.

Moving used the IceKey for several days, the difference in feel is enough for this writer to make it my new permanent keyboard. I have no doubt that in time more companies will be offering keyboards using a laptop key technology for desktop users. While the feel of the IceKey may not be for everyone, it's always good to have more choices, especially with something as personal as a keyboard.

Also, Apple's Pro Keyboard starts for \$99 (black key version) and \$109 (white key version), so at \$49 the IceKey is a good value. If you're looking to replace your keyboard, it's worth giving the IceKey a try. All it takes is five minutes to let it if you're going to love it or hate it.

Apple intro iFireWire over IP

Though it seems nice (a technology demo than anything else), Apple's new iTV/iP over iFireWire software suite isn't quite originally intended to the public via Apple's software downloads site, the

installer was pulled after 24 hours and is now only available from the Apple Developer Connection site.

In its current version, the software installs a kernel extension that allows you to set up an IP address over the iFireWire interface. You can share files between two Macs by simply plugging a FireWire-to-FireWire cable into each Mac, then using the IP address to connect and mount the drive of the other machine.

Another possibility would be to share a high-speed Internet connection between two Macs without having to buy a firewall or router. Just connect the Internet to one Mac via Ethernet, and then connect the second Mac over iFireWire. In the sharing preference pane turn on Internet sharing, and the Mac that's connected over iFireWire would grab an IP and be able to surf at full speed.

All of this could be done with regular Ethernet, but there is the added cost of needing a crossover cable, or a regular cable if you have a hub. Also, since iFireWire has a maximum data transfer rate of 400 Mbps and most Macs are limited to 100 Mbps Ethernet, iFireWire over IP does offer the possibility of moving more files more quickly between two machines.

Why bother putting the effort into this though? Well, for Apple there is the future possibility of running iMovie over iFireWire, allowing devices to automatically discover each other over a FireWire-connected network. You could connect to a friend's machine and their hard drive would automatically appear on your desktop, much like using iPhoto Target Disk mode, but without having to reboot one of the Macs while holding the T key.

Another possibility is that there might be new device in the works—in an update of iPod or a PDA—that will be able to use this technology. You could have a device that works automatically but needs to be connected to a Mac via iFireWire to connect to the Internet for updates.

Either way at this point it's not something you'd want to install on your work machines because it's only a preview release and may hamper stability. If you want to try it out you need to register at the Apple Developer Connection site—it's free and you also get access to update developer tools for OS X. □

John Serrano, a Mac/iP specialist based in Vancouver can be reached at serranodave@comcast.net.

Bell Canada launches free WiFi hot spots

By Jeff Evans

Canadian telco giant Bell Canada (bells.ca) is launching a new, free-of-charge test deployment of wireless high-speed Internet service in selected locations across Canada. At a Dec. 10 ceremony at Toronto's venerable Union Station rail terminal, Terry Mosley, president of Bell Ontario, declared the new AccessZone service proof of "Bell Canada's commitment to meeting the evolving needs of mobile professionals and business travellers who are becoming increasingly reliant on wireless technologies for high-speed Internet access while away from home or office."

According to Bell representatives, "seven or eight" prototype terminals have been built and put into service. These "hot spot" devices are about the same size and shape as a traditional public pay phone, connect to a high-speed 3 Mbps DSL line, and contain a wireless 802.11 access point that can support up



The company rushed to stake out its claim to public access WiFi at least in part as a response to a similar, \$6 million WiFi access program announced by its archrival Telus in early December 2002.

to 30 wireless PC or handheld computers simultaneously located within 9 m (30 ft) of the installation simultaneously.

The first group WiFi hotspot access

points have been installed in a variety of locations across the country: Toronto's Union Station, the Via Rail Paterson lounge in Montreal's Central Station, the

departure area at Montreal's Dorval International Airport, Kingston's Confederation Park and Museum and Kingston's St. Lawrence College.

Other installations are planned or available at the Air Canada Maple Leaf Lounge (business class) at Pearson International Airport (Terminal 2), Dorval International Airport, and Calgary International Airport. (Eventually, they will be in all other Air Canada Maple Leaf Lounges). Other AccessZone installations will be opened at Mount Sinai Hospital in Toronto and Trenton Public Library in Kingston.

The free test phase will last until mid-March, according to Bell.

The company rushed to stake out its claim to public access WiFi at least in part as a response to a similar, \$6 million WiFi access program announced by its archrival Telus in early December 2002.

The two Canadian telecom giants both see a big market in public access WiFi hot spots. According to a November

Continued on page 68

FREE!

Receive a FREE Digital Directory when you subscribe to **THEIR**

As a new subscriber, you'll receive the Free Digital Directory with your first issue of The Computer Paper. Fill out the form below and mail it along with your payment.

SUBSCRIPTIONS! 440 Church St., Suite 600
Toronto, ON M4Y 2G1

toll free 1-866-263-0899 Phone 1-800-465-3517

Email subscriptions@tcp.ca

A one year subscription is only \$21.99, taxes, shipping & handling included!

NAME

CITY

Phone/Fax/Ext.

Payment Option:

☐ VISA

☐ Master Card

☐ Cheque

☐ Money Order

Credit Card #

Expiry Date

Signature

CONVENIENT SUBSCRIPTION OPTION:

☐ NO MORE RENEWAL NOTICES! Please don't send me any renewal notices.

I will receive one annual invoice at the most current rate.



FLY COMPUTERS

Visit www.flycomputers.com for updated prices

Store Monthly Sales

17" SVGA, 27 1280x1024 Monitor	\$179
Baseball 7530F 17" .38mm(n) Flat Monitor	\$179
Monitor 50000 Black 60	\$119
TV Tower with Video Capture	\$35
LG 40x30x60 CDRW/Lite 48x24x48	\$75-\$82
LG/Liteon 15x DVD ROM	\$68
LG 52X CDRW	\$35
SuperBlitz 800x2x1200x4 66bit Scanner	\$75
10/100 PCI Network Card	\$12
GFx MX400 64MB / MX420 64M TV	\$55-\$58

ECS A928 Desknote

Intel P4 2.0GHz CPU
\$54M PC2100 DDR
30G HDD, DVD-RW Combo,
10/100 Ethernet, 56K Modem
Suggested Video with 1x Dsp.
\$665/294 Port
4xUSB 2.0 Port
TV 17" (Otg Model)



\$1599

NoteBook Family

Lenovo - IdeaPad G1 6029G, 15.5" DUD, 20GB 1x 17" TFT \$659	
Samsung NP 1050, 15.5" DUD, 20GB 1x 17" TFT \$299	
Acer - E210 15.5" 1x 17" TFT, 20GB 1x 17" TFT \$299	
Asus - E210 15.5" 1x 17" TFT, 20GB 1x 17" TFT \$299	
Acer, HP, IBM, Compaq, Fujitsu Notebooks Call	

Vancouver
We are here
Monday - Friday
10:00 AM - 6:00 PM

Burnaby
We are here
Monday - Friday
10:00 AM - 6:00 PM

Student Special

AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$539

Plus 17" SVGA Monitor



ATI Radeon 9000, 1000MHz

Only \$188



Performance
AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$499

AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$369

Player System
AMD XP 1600+ CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$599

Intel P4 1.60GHz CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$699

Power Player
AMD XP 1600+ CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$759

Intel P4 1.60GHz CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$899

Super Pentium
AMD XP 1600+ CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$1399

Intel P4 1.60GHz CPU
ECS ATX 1.60GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$1499

Upgrade
AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Only \$219

Upgrade
AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

\$1599

CPU
AMD Duron 1.30GHz CPU
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

MOTHERBOARD
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

MEMORY
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

HARD DRIVE
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

VIDEO CARDS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

SOUND CARDS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

MODEMS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

MONITORS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

PRINTERS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

SCANNERS
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

CD/DVD
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

CD-RW
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Digital Cameras
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

ACCESSORIES
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Network Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Other Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Other Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Other Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Other Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

Other Products
ECS ATX 1.30GHz CPU
15.5" DUD, 20GB 1x 17" TFT \$539

ALL PRICES REFLECT 5% CASH DISCOUNT AND SUBJECT TO CHANGE WITHOUT NOTICE

Master spell checking in Word



If you're like me, using a spell checker to proof documents makes life a lot easier. It's not that we're bad spellers, many of us just hit keys too quickly or find it difficult to spot errors when viewing a document onscreen. Though the spell checker is a "must run" tool in Word, few people are all of its features. This month, we do just that.

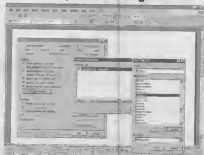
Spell check as you type

Though some users disable it, the Spell Check As You Type option points out potential spelling errors with a red wiggly underline as you type. Right-clicking on the underlined words opens the Spell Check shortcut menu, which offers a range of options including alternate spellings for the word. You can select one of the options and the menu closes, letting you continue to work on your document. Or, you can press Alt + F7 to move to the next error.

If you don't have this option enabled, you can turn it on by choosing Tools, Options, Spelling & Grammar, then select the Check Spelling As You Type checkbox. You can also select the Check Grammar as You Type checkbox, which will schedule grammar glitches to grow on you.

However, if you're color blind, red and green are just about the worst choices of colors possible. You can change these, though, by running one of the macros included with Word. To find it, choose Tools, Templates and Add-Ins, click Add, then browse to find the file support.dot (it will be in your program files/microsoft office/office11/resources folder). Click OK twice to add it. If you can't find the file, you'll need to install it from your original CD (see Knowledge Base article 284845 at support.microsoft.com/faq/284845).

Run the macro by choosing Tools, Macro, Macros, then select Support.dot (Word template) from the Macros dropdown list. From the Macro Name list, choose SpellingHighlightColorOption, click Choose Color, select the colors you want to use, click OK, then Change You can repeat this by the Grammar checker's way too fast. When you're done, click



If you add a newly spelled word to your dictionary, it can be removed easily.

Done and restart Word for the changes to appear.

Working with the dialogue

When you're spell-checking your document by pressing F7 (or choosing Tools, Spelling and Grammar) you are activating the Spelling and Grammar dialogue. You can move between this dialogue and the document you are editing by pressing Control + Tab. When you're done, click the Resume button in the dialogue to continue with your spell check.

After you've spell-checked a document once and chosen Ignore Once or Ignore All for repeated errors, you'll find they won't be reported again during the current editing session. However, they will be reported again if you close the document, reopen it, and rerun spell check. If you want Word to recheck a document in full (including reporting previously ignored errors), you don't have to close and reopen it. Instead, choose Tools, Options, Spelling & Grammar, and click Reread Document to clear the list of ignored words and spell check, if you haven't checked the document previously.

Removing misspellings

It happens to everyone occasionally: you click the Add to Dictionary button instead of the Change button and add a misspelled word to your dictionary. The result is that the type won't be flagged as a potential error anymore when you remove the mis-

spelling from the dictionary. To do this in Word 2002 choose Tools, Options, Spelling & Grammar, click Custom Dictionaries, select the Default Dictionary, and click Modify. A list of words you've added to the dictionary will appear on the screen. To remove one, simply select it, and click Delete. When you're done, click OK three times to exit.

With earlier versions of Word the process is a little different. Choose Tools, Options, Spelling & Grammar, click Dictionaries, select the dictionary you want to modify (there's probably only one in this list), and click Edit. You'll see a new Word document appear that contains a list of the words you've added to your dictionary. Find the misspelled word, select it, and press the Delete key to remove the word and the paragraph marker (there should be no blank line in place of the removed word). Save the file by choosing File, Save, and answering Yes to any prompt that appears warning about possible formatting losses. (That's OK). Close the file by choosing File, Close. If you had Automatic Spell Checking enabled before you edited this file, you'll have to enable it again by selecting Tools, Options, and the Spelling & Grammar tab.

Selecting what to check

You don't set up your document so that a selection of text won't be spell checked (except in HTML code, for example). To do this, select the text you don't want

checked, choose Tools, then Language, Enable the 99 Not Correct Spelling Or Grammar checkbox and click OK. The spell check will now skip the selected text.

If you frequently type text you don't want to be checked, you can create your own Style so you won't have to go through all of the above steps each time. To do this, select a paragraph that has spell checking enabled, click in the Style list box in the Formatting toolbar, and type in a name for your style (SpellCheckOff, for example), and press Enter. Now choose Format, Styles and Formatting to display the task pane, right-click on your new style and choose Modify. Enable the Add to template checkbox and click OK. This adds the style to your current template (which is most probably normal.dot) so it is available to all new documents based on this template.

You can also specify the language used to spell check a document, for example, you can use English (U.S.) or English (Canada), depending on your spelling preferences and the needs of your readers. To do this, select the text you want to change the spelling language for, choose Tools, Language, and pick a language. If the requisite language support is not available, you'll be prompted to install it at this point. Once installed, Word will swap from one language to another as required by the options you've set for each piece of text.

Add your own dictionary

When you're spell-checking a document and you click the Add to Dictionary button, Word adds the currently selected word to a user dictionary. If you haven't specified otherwise, this dictionary is called Custom.dic. It is really a simple list of words added to the user dictionary, which can be edited.

You can also have more than one custom dictionary. If you work in a legal practice, for example, you can buy a dictionary of common legal words to use with your spell checker. You can also build your own dictionary as you work by adding correctly spelled words every time they are reported as errors. If I take some word to build, but it doesn't cost anything more than your time.

To create or add a new dictionary, choose Tools, Options, Spelling & Grammar and click the Custom

Getting a grip on spam

By David F. Shoel

Widespread use of email has revolutionized commerce. Access to very cheap, very fast electronic communication has greatly expanded the reach of businesses, allowing even small businesses to have global success. Over the last few years, however, we've seen more and more of this in our inboxes:

- "THE ULTIMATE BULK EMAIL SOLUTION"
- "Look Younger and Lose Weight in 5 Weeks!!!"
- "FREE 30 day supply of HGH 9400mbw-3"
- "At \$3.00 per 100MB dose for Gen'ric Viagra. Limited Time Free Doctor Consultation"

I'm talking about unsolicited commercial email, junk mail, spam.

Spam has become more and more troublesome as spammers realize they can make more than their costs at practically no cost. According to some studies, open new accounts for 33 percent of all email traffic. IDC says 31 billion junk email messages are sent every day, with projections that the number will double by 2006.

Spam isn't merely an annoyance, it costs businesses time and money. Employees waste valuable time cleaning out their mailboxes. Worst of all, spam is lowering the business value of email. What promised to be a fast, efficient means of business communication is turning out to be an exercise in junk-sorting and time-wasting.

In this article, we'll look at the issues at the root of the spam problem, learn



Worst of all, spam is lowering the business value of email. What promised to be a fast, efficient means of business communication is turning into an exercise in junk-sorting.

what spam-fighters are doing about it, and offer concrete tips for reducing the cost and risk of spam in your business.

The nature of spam

Several factors conspire to increase spam's prevalence and make spamming attractive to spammers:

- SMTP—the ubiquitous Simple Mail Transfer Protocol used on the Internet—provides no way to authenticate the email addresses of senders. Anyone can fake an email address.

(This has implications not only for spam, but also for the latest crop of viruses, which pretend to come from innocent email rather than the real sender.)

- Sending an email message across the world is as cheap as sending it next door. Spammers can take advantage of this by spamming from servers in quarters with weak or nonexistent anti-spam laws.
- People still rely heavily on email, so spam is likely to reach its target. While the Mozilla Web browser allows blocking of pop-up Web ads, and some browsers block other Web and instant messaging ads, no one is willing to close off email, because that would defeat its purpose.

As long as spamming continues to be cheap, reliable and non-traceable, it will continue to be a problem. Attacking spam requires addressing one or more of those three factors.

Thinking like a spammer

To really understand how to stop spam, we need to think like spammers. Let's put on our cross-hatching black hats and become evil spammers for a moment.

The first thing we need is protection from consumer backlash. We can easily achieve this by either faking the sender address completely, or using a disposable Hotmail or Yahoo email address at the sender address. Statistics show that a disproportionate amount of spam claims to come from free email services.

Next, we want to maximize our cost. If we're on a dialup line, we really don't want to send thousands or millions of individual messages. It's much cheaper to find a so-called "open relay" that will forward messages for us. (An open relay is an unconfigured email server that accepts messages from anyone and relays them to anyone. This lets it batch up the messages, sending one message to perhaps hundreds of recipients, and leaving it up to the open relay to redistribute them to individual recipients.)

To further lower our cost, we don't want to deal with bounced messages or errors. Our goal is to blast messages at as many people as possible; we don't particularly care about reaching every single recipient reliably. So we use special software that ignores errors, and we take the sending address to be bounced messages come back.

Although we don't care about the reliability of an individual message, we do care that, on the whole, the messages get through. So we keep our messages short to avoid size restrictions, and we don't use any attachments, preferring plain text or HTML mail.

In order to evade content-scanners, we might use tricks like encoding our message or splitting words with HTML comments (e.g., "c-o-m-m-e-n-t-s"). We'll avoid unsolicited content filters by writing "Virus Guard of Virginia" or using GPGPGPG.

Thinking like a spam fighter

Now, let's put on the white hats of spam fighters. What tools do we have at our disposal?

- Spotting faked sender addresses is, in general, impossible. However, if a message comes from a nonexistent domain, it makes sense to reject it. Most mail server software can be configured to reject messages from nonexistent domains. Unfortunately, these messages account for a variety

Continued on page 52

LaReve Technology

Database Architect, Design & Analysis

Distributed Data Applications

with ASP.Net and VB.Net

Cell: (604)788-4166

Fax: (604)270-4285

www.lareve-technology.com



HALF PRICE COMPUTER BOOKS

New Year... New Books!



Designing Web Audio
Reg. \$51.95
Now \$25.98!



Java Teach Yourself
Beginning Programming in 14 Hours
Reg. \$28.95
Now \$14.48!



Step by Step Excel 2002
Reg. \$43.99
Now \$21.99!

90 Mail-in rebate on all Marner Graphics
A quality Series books for the month of January

Teach Yourself Visually Windows XP
Reg. \$44.99
Now \$30.99 after \$5.00 Mail-in rebate!

Teach Yourself Visually Office XP
Reg. \$44.99
Now \$30.99 after \$5.00 Mail-in rebate!



Bookshooting,
Maintaining & Repairing PCs
Reg. \$89.99
Now \$44.99!



The Art & Science of Web Design
Reg. \$67.95
Now \$33.98!



C# Black Book
Reg. \$77.99
Now \$38.99!



Object-Oriented Methods:
Principles & Practice, 3rd ed.
Reg. \$82.49
Now \$41.24!



TCP/IP Primer Plus
Reg. \$67.95
Now \$33.98!

Book Complete Web Site Packages!
Create Your First Web Page in a Weekend
Create FrontPage 2000 Web Pages in a Weekend
Increase Your Web Traffic in a Weekend



Reg. \$74.97 combined
Bundle Price \$14.99!
Only \$5 per book!



Managing a Windows 2000
Network Environment
Reg. \$86.99
Now \$43.50!



XML, XSLT,
Java, and JSP
Reg. \$74.95
Now \$37.48!



Hacking Exposed, 3rd ed.
Reg. \$74.99
Now \$37.49!

6 LOCATIONS

Vancouver
550 Seymour Street
604-688-7791
Vancouver
520 West 8th Avenue
604-876-1007

Coquitlam
140 Schoolhouse Road
604-521-3905
Richmond
122-4940 No. 3 Road
604-231-1922

Burnaby
4269 Lougheed Highway
604-291-1033
Victoria
160-2950 Douglas Street
(250) 361-4846

Get the full story on page 100.

Continued from page 35

highly small proportion of space.

- **Blocking messages from free email providers is likely not feasible.** There are simply too many legitimate users of these services to block them without negative business effects.
 - **Blocking open relays may be a little more promising.** There are databases of open relays, updated in real time that let you look up a machine with a simple DNS request. We can block mail from machines in these databases. Unfortunately, of course, there are many more (very administrative) and hence open relays) than are listed in open-relay databases.
 - **Blocking "bad" IP addresses can help.** This prevents spammers from sending mail directly from dialup or DSL, forcing them instead to use their ISP's mail server and (presumably) be more accountable for their email. The downside, of course, is that you may block legitimate email, or forget to update your database when network addresses are reassigned.
 - **Detecting spammy IP addresses is a hot-and-minty proposition.** Some spamware adds special headers to email messages, and can thus be detected. But most spamware truly very hard not to be detectable, precisely in order to seem legitimate.
 - **Our last spam-fighting tool is content-scanning, and thus probably the most fun and reliable method.** Spammers are usually not particularly sophisticated, and although they may use fancy tricks to try to avoid content-scanners, most spam email has (or at least had) a certain style.
- The following are some of the content-scanning techniques we rely-based on spammers' and crackers' techniques. With rule-based techniques, email messages

are examined for certain characteristics. For example, do they mention the word *Vegan*? Do they have *RDV* in the subject? Do they contain g a p p y text or a WHOLE LINE OF YELLING? How about many exclamation marks in a row¹⁰? Or embedded HTML, *canvase* - *hooey*?

Each rule is given a score, and messages that score higher than a specified level are considered more likely to be spam. Assigning the scores, of course, is a tricky business, and there are sophisticated algorithms for coming up with scores that detect most spam while minimizing false positives. SpamAssassin is probably the most effective rule-based filter.

Statistical techniques rely on learning what is spam and what isn't. In "training mode," the filtering software is told which messages are spam and which aren't. The software looks at the messages and builds probability tables that measure how often certain words or phrases are or aren't spam. Eventually, the tables become complete and accurate enough to separate spam from non-spam without further training.

Traversable software can even be taught to classify messages as spam, business-related, hobby-related, etc. While statistical techniques work well for individuals, they are probably not well suited for organizations, because different people in the organization might have different ideas about what is or isn't spam, and a traversable filter is likely to work well for eachbook.

Editorial Board

So far, the spam-fighting techniques noted focus on detecting likely spam. But what do we do after detection?

Simply disposing of suspect messages is a non-solution for most businesses, because no automated technique, however good, can guarantee not to block

leisure email. For companies that depend on email for leads, this is unacceptable. So most spam-fighting software simply marks suspect messages with a special subject, or redirects it to a special folder. However, someone still has to wade through the junk to pull out useful nuggets. This is not much of a time-saver.

Some (expensive) services have legions of spam editors who manually examine messages and set up a database of which messages are spam. This database is available by content-scanners on mail servers, which then reject spam messages.

Distributed checklist services operate on a similar principle: once a message has been identified as spam by some number of volunteers, it is added to a database and everyone else can reject it accordingly.

To fight back effectively, you need a multi-pronged approach:

- If you run your own mail server, consider using real-time blacklists and distributed checkouts databases. Run custom-scanning software on your server to identify spams.
- If you use a POP3 client for your email, check for a client that offers anti-spam support, preferably one that allows you to create custom blacklists and whitelists. Avoid running anti-spam software on on your desktop if you can, because you still have to waste time downloading and analyzing spams. Anti-spam scanning belongs on the mail server.
- Never reply to a spam message. A reply simply confirms that your address is valid and invites new spams.
- If you want to complain, never do so to administrators of the sender's domain, because the sending address is often a fake. Instead, send the IP address of the mail origin and the IP address of the mail origin and

complaint to network administrators for that address. You can find good instructions for spam reporting at www.spamcop.net.

- Use anti-spam software that does not automatically dispose of messages, but that tags spam while at the same time offering an efficient way to remove and reject valid messages. Software that sorts by a filter a spam score, for example, makes it much easier to pick out valid email. Software that lets you create blacklists and whitelists of known spammers and friends can go a long way to reducing your workload.
- If you live in jurisdictions that allow it (such, note in Canada only), use legal action against spammers. Technical means can help reduce the reliability and increase the cost of spamming, but a lawsuit really hits a spammer.

Conclusions

Spam will always be with us, regardless of the technical tools or legal steps used to combat it. As content-scanners become more widespread, we'll see an arms race between scanner authors and spammers.

Content-scanning, real-time blacklists, and other technical measures will succeed in blocking most spam, and are worth implementing. Leading-edge spammers will always be a step ahead, but the vast majority of unsophisticated, semi-literate spammers will be stopped cold. □

David Skiff is president of Hoaring Penguin Software Inc. (www.hoaringpenguin.com), creator of the open-source HOSKIDmailing email scanning software and Can't Spam Top (www.CMSQL.com), commercial anti-spam and anti-virus solution. You can email David at dskiff@hoaringpenguin.com.

Join the Online Business World
 More than Web Hosting from \$4.99/Month*

Options for your eCommerce needs

- ★ CA Certified Webmaster (1996)
- ★ 4 in 1 Credit Card Secure Transactions
- ★ Business Processing Applications
- ★ Storefronts - Shopping Carts

Competitive Goals Always Call 402.955.2024

WWW.MANUALLABOUR.BIZ

Manual Labour eBusiness Services Innovator
 *199-2000 Best Ad Advertiser *Awarded 1999 Service to Society

www.laptopcloseout.com

**USED
LAPTOPS**

Now on Sale:
Pentium Laptops, Modems, Network cards
Memory Upgrades, Storage Upgrades
CD-ROMs, DVD-ROMs, PCMCIA Cards Etc.

for info visit web-site or Call

418-975-0748

SALE

PC World

1439 Kingsway, Vancouver, B.C. V6B 6A6
Monday - Saturday 10:30am - 6:30pm

Computer Ltd.
For more products & best price please visit www.pcworldcomputer.ca

PCW-D1400 \$349

- Pentium 1400 CPU
- 4GB Mainboard
- 4GB PC133 SDRAM
- Integrated Video Card
- Master 30G 7200 Hard Drive
- LG S2X CDROM
- 1-44 Parascanic Floppy Drive
- 17" ATX 1600Hz Case
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated 10/100 Network Card
- 240W 10 Speakers

PCW-PC17 \$419

- Pentium 4 Celeron 1.7 CPU
- ECS P4500G4000 Mainboard
- 256M PC133 SDRAM
- Integrated AGP Video Card
- Master 30G 7200 Hard Drive
- 1-44 Parascanic Floppy Drive
- LG S2X CDROM
- 17" ATX 1600Hz Case
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated 10/100 Network Card
- 240W 10 Speakers
- Upgrade to P4 L.P. +512K
- Upgrade to 256M DRAM - \$35

PCW-XP1800L \$444

- AMD SP1800 CPU
- ECS KT388M Mainboard
- 256M PC133 SDRAM
- Integrated Video Card
- Master 30G 7200 Hard Drive
- 1-44 Parascanic Floppy Drive
- LG S2X CDROM
- 17" ATX 1600Hz Case
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated LAN Card
- 240W 10 Speakers

PCW-XP2000 \$539

- AMD SP2000 CPU
- ECS KT388M Mainboard
- 256M PC133 SDRAM
- GeForce MX400 4MB Video Card
- Master 30G 7200 Hard Drive
- 1-44 Parascanic Floppy Drive
- LG S2X CDROM
- 17" ATX 1600Hz Case
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated 10/100 Network Card
- 240W 10 Speakers
- Upgrade to 512K RAM - \$22
- Upgrade to DRAM +\$15

PCW-P1800 \$577

- Pentium 4 1.7 CPU
- ECS P4500G4000 Mainboard
- 256M PC133 SDRAM
- GeForce MX400 4MB Video Card
- Master 30G 7200 Hard Drive
- 1-44 Parascanic Floppy Drive
- LG S2X CDROM
- 17" ATX 1600Hz Case
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated 10/100 Network Card
- 240W 10 Speakers
- Upgrade to P4 L.P. +512K
- Upgrade to 256M DRAM +\$15

SPECIAL Get 55 coupons & FREE Installation when you apply Show Card. **UPGRADE PACKAGE** Starts 1200 CPU. **PCW-Mini1800 Small Network Card \$195** **Princo 48X 80min 50pcs CD \$18.5**

Hard Drive

- Maxtor 40GB 4400 \$379
- Western Digital 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379
- Maxtor 40GB 4400 \$379
- Seagate 40GB 4400 \$379

Printer

- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129

Scanner

- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129
- HP 5400 \$129
- Canon 5400 \$129

Motherboards

- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379

Monitor

- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379
- Philips 17" 1024 \$379

Modern

- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379

Networking

- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379
- ASUS K7T440 \$379

PCW-P2000 \$875

- Pentium 4 2.04 512K CPU
- ASUS P4500G4000 Mainboard
- 256M DRAM
- 4GB MX400 4MB 4MB Video Card
- Master 30G 7200 Hard Drive
- MSI MX4000 CD-ROM
- 1-44 Parascanic Floppy Drive
- 17" ATX 1600Hz Case
- Integrated 4 Channel Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- Integrated 10/100 Network Card
- 440W 3 2 Subspeakers
- USB 2.0 & FireWire
- Upgrade to P4 L.P. +512K

PCW-Mini1800 \$888

- Pentium 4 1.7 CPU
- Seagate 5550 hardware
- 256M PC133 SDRAM
- Integrated AGP Video Card
- Master 30G 7200 Hard Drive
- Sony S2X CDROM
- 1-44 Parascanic Floppy Drive
- Integrated 10/100 Network Card
- Integrated Sound Card
- PS/2 Keyboard
- PS/2 Wheel Mouse
- 440W 3 2 Subspeakers
- Upgrade to P4 L.P. +512K

PCW-XP2400 \$968

- AMD SP2400 CPU
- MSI KT4VL 310FS Mainboard
- 256M PC133 SDRAM
- MSI 64 MX400 4MB 4MB Video Card
- Master 30G 7200 Hard Drive
- MSI 48X24X48 CD-RW
- 1-44 Parascanic Floppy Drive
- 17" ATX 1600Hz Case
- Integrated Sound Card
- Microsoft Internet Explorer
- Logitech Optical Mouse
- Integrated LAN Card
- 440W 3 2 Subspeakers
- USB 2.0 & FireWire

PCW-P2400 \$1288

- Pentium 4 2.4 512K CPU
- ASUS P4500G4000 Mainboard
- 512M DRAM
- 4GB MX400 4MB 4MB Video Card
- Master 30G 7200 Hard Drive
- MSI 48X24X48 CD-RW
- 1-44 Parascanic Floppy Drive
- Pentium 4 ATX 1600Hz Case
- Integrated Sound Card
- Microsoft Internet Explorer
- Logitech Optical Mouse
- Integrated 10/100 Network Card
- Creative Surround 5.1 Speakers
- USB 2.0 & FireWire

PCW-Dual2000 \$1688

- 2 of AMD SP2000 CPU
- ASUS A3200G4000 Mainboard
- 113M PC133 ECC DRAM
- Radeon 9800 128MB Video Card
- WD 80GB 7200 Hard Drive
- MSI 48X24X48 CD-RW
- 1-44 Parascanic Floppy Drive
- 17" ATX 1600Hz Case
- Integrated 4 Channel Sound Card
- Microsoft Internet Explorer
- Logitech Optical Mouse
- Integrated 10/100 Network Card
- Creative Surround 5.1 Speakers
- USB 2.0 & FireWire

nextbit

COMPUTERS LTD

713-8538
fax 713-8539

www.nextbit.com
Mon-Fri 10:00am-6:00pm
Sat 10:00am-5:00pm

Nextbit Computers Ltd
18200 S. 182nd St.
Suite 100
San Jose, CA 95131

USA
MasterCard
Visa
#5-111 West Broadway,
Vancouver, BC V5L 1P4
Shipping & Postage & Assembly
Inquiries: Toronto, USA: 416-593-1111
Go to our Website: www.nextbit.com

AMD System Systems

CC-1 AMD System
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

AMD Power System

CC-2 AMD Power System
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

AMD XP System

CC-3 AMD XP System
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

NextGen Special

CC-4 NextGen Special
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: PIII 450MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Intel Celeron System

Intel Celeron System
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

PENTIUM 4 SPECIAL

PENTIUM 4 SPECIAL
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

P-4

P-4
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

AOpen

AOpen
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

AMD K8 System

AMD K8 System
CPU: Athlon 64 3000MHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Athlon 64 3000MHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Intel Celeron System

Intel Celeron System
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Intel Celeron System

Intel Celeron System
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Celeron 300MHz
RAM: 128MB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

4-Port Acetec WinFirewall

4-Port Acetec WinFirewall
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Pentium 4 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Core 2 Duo System

Core 2 Duo System
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A
CPU: Core 2 Duo 3.0GHz
RAM: 1GB
Hard Disk: 2GB
CD-ROM: 24X
DVD-ROM: 24X
Floppy: 3.5" 2DD
Mouse: 3-Button
Keyboard: 104-Key
ATX Power Case: 1100W/10A

Master spell checking in Word

Master spell checking in Word
Master spell checking in Word is a simple task of words you want flagged as misspellings when encountered in a spell checker.

Before you can create an exclusion file, you need a filename and location for the file to do this, choose Start, File, or Folders, and search for Master*. The results will be a list of all the locations (word lists) you have created, any of which may be being used by Word. You will need to have one exclusion file (with the extension .inc) for each file you find.

In Word 2000/2002, the extension (.inc) must appear in the name folder in your custom doc file. If you're using Word 97, the .inc file must be saved in the same folder as the file. If you're using Word 97, the .inc file must be saved in the same folder as the file. If you're using Word 97, the .inc file must be saved in the same folder as the file.

Your next file is a plain text file you create using Word, Notepad, or WordPad—the resulting file must be saved as Text Only (*.txt). Type each word, one to a line, in this file, then save the file with the correct name and location if you have multiple files. Save this file with file names with different names as you create one .inc file for each file.

When you're done, close and restart Word and type one of the excluded words. Spell check the document and you'll find the word will be flagged as a potential spelling error. This allows you to check the word each time you type it to ensure you've used it in the correct context. You should note that, when an excluded word is flagged as an error, you can only choose Ignore Once (Ignore All isn't an option) and the Add to Dictionary button is disabled. So.

If you change your mind about having a word in your exclusion file, open each .inc file, remove the word and save it again.

As you can see, there's more to Word's spell checker than meets the eye. It's a great tool and while you can master it all day with the need to proofread your documents, there are ways to make better use of this tool.

Helena Belding speaks on writing handbooks for business owners and is a member of publications in Australia, the UK, and the US. Contact Helena at helena@belding.com

DIGITAL

MATRIX

A CANADIAN COMPUTER PUBLISHER PRODUCT



Get a free copy

of Digital Matrix: Roadmap to
Digital Photography and Video



Request your free copy at* www.canadacomputers.com/digitalmatrix
or complete the following form and mail to: **Digital Matrix**, 625 Church St.
Toronto, Ontario M4Y 2G1

☐ **Yes I want to receive a free copy of Digital Matrix**

Name
Address
City Province Postal Code
Phone Email

*Copies limited to 1000

Information

CSS selectors: Part 2

By Keith Schengill-Roberts

In the last article, we looked at some basic selectors: `contextual`, `child`, and adjacent sibling selectors. But there are other types of selectors available that allow for a greater range of selective formatting. In this article, we look at the set of selectors that lets you format attributes under a number of different conditions.

Attribute selectors

The set of attribute selectors greatly extends the functionality of the class and id attributes. The basic idea of these selectors is that they let you format Web objects utilizing attributes on a conditional basis—so you can select a particular combination of elements to be formatted when it appears within a Web page. The Cascading Style Sheet 2.0 (CSS2) specification defines four of these attribute selectors. In each case, an attribute value is enclosed within square brackets, and is

then followed by further CSS code that does the actual formatting. Here are quick descriptions for their use and purpose:

- element[attribute]**—Matches the name of the attribute contained within square brackets.
- element[attribute="value"]**—A match is made when the attribute equals the value of "value."
- element[attribute~="value"]**—A match is made when the value of "value" roughly matches the value of "value," in cases where the text "value" may be part of a larger word.
- element[attribute|="value"]**—A match is made whenever the attribute matches the first few letters of a value whose first few letters match the text "value."

The initial example is pretty complex whenever you have a particular type of attribute appearing against a specific element, the browser formats it accordingly. For example, take a look at the following

code snippet:

```
<p class="header">[color=red]
</p>
```

In this case, any `<div>` header (containing a class attribute set to the value "header") would be formatted red. If there's an `<div>` header on the page with a class value set to anything else, it won't be considered a match, and therefore won't be turned to red. You can even use a "null" value with this particular arrangement, which can be quite useful in some circumstances. Let's say you have a dynamically generated Web page, and automatically generated Web pages are automatically generated but are empty, such as a "Next" link at the end of a slideshow Web presentation for example. What you could do is insert the following code in the header of your Web page.

```
<p class="header">[color=red]
</p>
```

In this case, whenever you get an anchor tag that doesn't contain any page

```
<p class="header">[color=red]
</p>
```

code snippet:

```
<p class="header">[color=red]
</p>
```

In this case, whenever you get an anchor tag that doesn't contain any page

Continued on page 88



INTERTECH

O A Distribution Inc.

tel: (604) 872-7337
fax: (604) 872-2524

Our 14th Year!!

Member of
BBB
Better Business Bureau

www.intertechpc.com

ATLANTA 404-524-0000
NORTH 404-524-0000



Time to Reward Yourself!!

Final Intel Celeron Systems

P4 400 620MHz, 1GB Cache
4GB RAM, 33.33 GB/sec IDE
250Watt S20AH PCI 133
1.44MB Floppy Drive
32x CD-ROM
Standard 350W Gold-Plated AXP
AC97 3D Sound, 1200 Dots
Win 98 Keyboard, Mouse
Shipping 7000 24 17" Monitor
10 1300MHz Network Card
VIA PM900 Sound, IDE 2.0
\$849

Value Starter Systems

400MHz Athlon 7000P
4GB RAM, 33.33 GB/sec IDE
250Watt S20AH PCI 133
1.44MB Floppy Drive
32x CD-ROM
Realtek 10/100 Network Card
AC97 3D Sound, 1200 Dots
Win 98 Keyboard, Mouse
Shipping 7000 24 17" Monitor
10 1300MHz Network Card
32x CD-ROM Sound
\$739

Loaded P4 & AMD XP Systems

400MHz XP Series with Mouse
4GB RAM, 33.33 GB/sec IDE
250Watt S20AH PCI 133
1.44MB Floppy Drive
32x CD-ROM
Realtek 10/100 Network Card
AC97 3D Sound, 1200 Dots
Win 98 Keyboard, Mouse
Shipping 7000 24 17" Monitor
10 1300MHz Network Card
32x CD-ROM Sound
\$849

Final P4 Systems

400MHz Athlon 7000P
4GB RAM, 33.33 GB/sec IDE
250Watt S20AH PCI 133
1.44MB Floppy Drive
32x CD-ROM
Realtek 10/100 Network Card
AC97 3D Sound, 1200 Dots
Win 98 Keyboard, Mouse
Shipping 7000 24 17" Monitor
10 1300MHz Network Card
32x CD-ROM Sound
\$739

Upgrade Options

400MHz Athlon 7000P
4GB RAM, 33.33 GB/sec IDE
250Watt S20AH PCI 133
1.44MB Floppy Drive
32x CD-ROM
Realtek 10/100 Network Card
AC97 3D Sound, 1200 Dots
Win 98 Keyboard, Mouse
Shipping 7000 24 17" Monitor
10 1300MHz Network Card
32x CD-ROM Sound
\$739

CSS selectors: Part 2

Continued from page 56

test—in other words, when it doesn't actually link to anything—this particular attribute selector will render it invisible.

The third type of attribute selector allows you to choose a particular value within an attribute whenever there is more than one value present. This is available because there are certain times when you may wish to call upon more than one type of class or id attribute floating within a page.

No can, in fact, have a single Web element on a page formatted by more than one class attribute for example, with each value separated by a comma. The “`~`” is

the third type of attribute selector tells the browser to select against a particular value whenever it appears, whether it be the first, second, or third (or more) value that appears within the value for a given attribute. The following sample Web page code should help make this concept clear:

```
<div>
<div>Attribute Selector Example</div>
</div>
<div>
p goldfish (postweight, bold)
{color:~"gold"} (color:gold)
</div>
</div>
<div>
p The Story of Goldfish and the Three Bears
</div>
<div>
<div>~"goldfish">Once there was a little girl
whose name was Goldfish.</div>
<div>~"goldfish">She ran into some
trouble with a lot of bears.</div>
</div>
</div>
```

In this case, the first paragraph is formatted normally, the second is rendered in bold and the third is displayed in bold and is a gold color, with the gold formatting coming from the `~"gold"="gold"` (color:gold) matching the “gold” value in

`~"goldfish"="gold"`.

The fourth type of attribute selector is for use when you are trying to match a particular type of hyphen-separated (instead of space-separated) values contained within an attribute. It uses “`+`” and tells the browser to look and match against a given value only when it first appears in a given sequence of hyphen-separated values contained within an attribute. Again, a look at some actual code may help make things more clear:

```
<div>
<div>
<div>~"background">
<div>~"background">
</div>
</div>
</div>
<div>
<div>~"background">
<div>~"background">
</div>
</div>
</div>
<div>
<div>~"background">
<div>~"background">
</div>
</div>
</div>
```

In this case we have a Web page where we have the attribute selector looking for matches to `~"background"`, which uses

(color:white;background-color:red) to turn the text white against a red background. In the paragraphs contained within the body of the page, only two paragraphs meet this condition: those beginning with `~"background">` and `~"background">` (color:white;background-color:red), because the value “`background`” appears at the beginning of the sequence of hyphen-separated values. The other two paragraphs are not matched since “`background`” does not appear at the beginning of the hyphenated sequence of values.

As with many of the selector types from the last article, support for attribute selection is not yet implemented within Internet Explorer. However, you will be able to use these code examples for the way they were intended if you are using a current edition Netscape Navigator, Mozilla, or Opera browser. ☺

Next Time: What CSS3 has in store for selectors. Keith Schenck-Rubens welcomes any comments, questions, suggestions, or HTML tips you may have. Email him at msch@msch.net. He teaches a course on CSS and Dynamic HTML at the University of Toronto's Faculty of Information Science (www.ics.utoronto.ca) and his latest book on CSS, *Cover CSS, 2nd Edition*, is due out in 2003.

WWW.

TOP—In addition to advertising its services, Solution-based Northern Lights Internet Solutions' Web site includes a Database of links for forums and community networks across Canada and around the world. So, if you need to know how to get online cheaply in Kyrgyzstan, for example, bookmark this site. www.nlights.com/free/

SPECIAL EDITION USING - THE ONLY BOOK YOU NEED



Special Edition Using Windows XP Home Edition, Beginner Edition



Special Edition Using Windows XP Professional, Bestseller



Special Edition Using Visual C++ .NET



Special Edition Using Visual Basic .NET



Special Edition Using Microsoft Project 2000



Special Edition Using Microsoft Access 2000

Save 30% off* all SE Using titles at these participating locations:

BRITISH COLUMBIA
Half Price Computer Books
1401 Loughheed Hwy
Burnaby
www.halfpricecomputerbooks.ca

Half Price Computer Books
1401 Loughheed St.
Coquitlam
www.halfpricecomputerbooks.ca

Half Price Computer Books
510 Seymour Street
Vancouver
www.halfpricecomputerbooks.ca

Half Price Computer Books
140-1050 Douglas St.
Victoria
www.halfpricecomputerbooks.ca

Half Price Computer Books
133-4940 JRD
Richmond
www.halfpricecomputerbooks.ca

Half Price Computer Books
570 West 87th Street
Vancouver
www.halfpricecomputerbooks.ca



*Offer ends January 31, 2001



Quick Tips

PowerPoint presentation tips

View it in miniature • View the current slide show in miniature (not taking up the whole screen), by holding the Control key as you choose View, then View Show. A smaller version of your show will appear in the top corner of the screen. You'll be able to drag through it, and review your presentation design on the screen in all ways to read. Switch between the two, making your edits in the edit area and immediately seeing the changes in the playing version.

Smarter editing • If you have an Intelligent mouse or one with a scroll wheel that controls zooming, you can use it to zoom in and out of a slide when editing to see more or less of it on screen. In Normal view, with the slide visible, simply hold the Control key while you roll the mouse wheel to make the slide larger or smaller as required.

Doodle in a presentation • When making a presentation you can draw on the screen—you may, for example, want to circle a number or an important point. To do this, click Control + F while making your presentation to turn your mouse

pointer into a pen that you can use to draw on your presentation. To turn it into an eraser to use to point to items, click Control + A. Your drawings will not be saved with the presentation, and will disappear as soon as you move to the next slide.

Erase pen marks • To remove the pen marks from the slide without advancing to the next slide, click the Slide controls at the bottom-left of the screen and choose Screen, then Erase Pen.

Rehearse your presentation • Before you make your presentation in person, give it a test run (or two or three!). Choose Slide Show, Rehearse Timings, and step through a mock presentation. The timer will keep track of your overall time and the time you spend on each slide. Use this as a guide for where you can whittle down a long presentation or where you can spend more time if you need to flesh it out a bit more.

Saving timings • When you're rehearsing the timing of slides, you can save them to the presentation images and use them to

animate the presentation. You can even switch between the two by choosing Slide Show, Set Up Show, and select the Use Timings if Present option in Manually for advancing slides.

Hide the slide menu • When making a presentation, you can remove the menu indicator in the bottom-left of the screen by choosing Tools, Options, View tab, disabling the Show PopUp Menu Bottom checkbox, and clicking OK. The indicator for the popup menu will be removed, but you can still display it any time by right-clicking the screen and choosing the menu option you want.

Finish off with a black • When you've finished your presentation, it will look more professional if it ends with a blank screen—not the inside of PowerPoint—if you are running it from here. To ensure all you see is black when you're done, choose Tools, Options, View tab, and enable the End With Black Slide checkbox.

Paper-based shows • One way to fully document a PowerPoint show and make it available to people who weren't there or

don't have access to a computer, is to print it out. To do this, choose File, Send To, and Microsoft Word. Choose the layout you want (with or without Notes), and click OK. The entire document will then appear in Word, where you can edit it or print it out as fit.

Taking a break • If you need to pause your slide show midway, you can press B (black screen) or W (white screen) to clear the current slide and display an empty screen. Or, if you are happy to leave the current slide on the screen while you pause, choose Screen, then Pause from the popup menu.

View a hidden slide • If, when presenting a slide show, you choose to display a slide that is hidden (and if it is the most slide in the queue) you can do this by pressing H. Or, you can use the Go option on the popup menu to get there (hidden slides appear in the list with their slide number in brackets).

—Nirav Bradby

Online holiday spending up 24 percent, researchers report

According to the eSpending Report, a U.S. study conducted by Goldman Sachs Group, Harris Interactive and Nielsen/Nielson, spending online over the 2002 holiday season grew 24 percent since last year, not including travel. Consumers spent almost \$13.7 billion online in comparison to \$11 billion total reached in the 2001 holiday season.

Those surveyed said they designated 16 percent of their holiday spending budgets to online purchases, in comparison to the 14 percent who said they had done so in 2001. The study found that the most popular time to shop online fell at opposite ends of the spectrum. Spending patterns revealed that most shopping was done either earlier in the season or the week

before Christmas.

"With each holiday season, e-commerce becomes more of a mainstream activity," Lori Javenski-James, director of e-commerce research at Harris Interactive, said in a release.

Jupiter Research has predicted similar growth. A study released by the organization forecasts that Final Figures for the

2002 online holiday shopping season, to be released in March, will exceed the \$13.1 billion originally estimated—a 17 percent cost growth compared to 2001.

"Unleashed free shipping promotions are the primary reason that the 2002 holiday shopping season was such a good one," said Ron Casser, senior analyst at Jupiter Research, in a release.

SAVE

at least

20% off

Publishers' list price on every computer book.

Everyday!

Hot Digital Photography Books!

Digital Photography 66 Easy Tips to Make You Look Like a Pro!
Digital Photography for Dummies 4th ED with
How to Do Everything Photoshop Elements 2
How to Do Everything Your Digital Camera 2nd ED
iPhoto Missing Manual
LIFE Digital Camera Book
Photoshop Elements 2.0 for Dummies
Photoshop Elements 2.0 Ways to Create Cool Pictures
Photoshop Elements One-Click World with
Photoshop Elements Win & Mac Visual QuickStart Guide

Other Stores	OUR PRICE
\$29.95	\$25.95
\$29.95	\$25.95
\$34.95	\$27.95
\$34.95	\$27.95
\$39.95	\$34.95
\$39.95	\$27.95
\$39.95	\$25.95
\$49.95	\$37.95
\$49.95	\$37.95
\$119.95	\$59.95

Book
WAREHOUSE

832 W Broadway 875-8711
2288 W 42nd Ave 734-8711
4444 W189th Ave 231-4744
360 Commerce 643-5711
1141 Davis St 885-8711
1834 Lansdale 904-5711

Warehouse's own independently selected discount books

The sands of time

By Sean Connolly

Fifteen years ago, I was midway through my first year at university. My experience with computers up until that point was a manual typewriter, a rotary telephone, and, pretty basic—bored. At the time, computers were not quite so integrated into my life, but were still an exciting novelty.

When I was about 12 years old, I took a summer course at Brandon University called Computers for Kids; they led us into the computer lab and plunked us all down in front of Commodore PETs. In a way, they were the babysitters of their day; they were found in schools all over the place, they had an all-in-one design, and the floppy was optional (mine had, and the floppy was optional). I missed, we did most of our file storage with a cassette deck. The graphics were pretty bad and the screens glowed a slightly chilling green, but at the time I thought I had discovered nirvana. In follow-up courses I learned that the computers could be networked together (some of us spent more time sending each other messages that actually listening to the teacher), and that you could use the computer for serious mathematical work. I was hooked.

Of course, it wasn't long before we got a computer at home to keep my interest going. My dad ordered the Sinclair ZX81, one of the first computers aimed at the consumer; it was easy to assemble (if you chose to go that route), it was fairly easy to use, plus it was inexpensive.

I was actually so happy with the TI-99/4A that I didn't pay much attention to the Vic-20 or the Commodore 64, even at the height of their popularity.



It came with only 1 KB of memory onboard—thankfully my dad sprung for the weighty 16 KB RAM module, which clamped onto an edge connector on the rear.

I hooked up to the TV, too, which meant we didn't have to buy a whole lot of equipment to get started. The keyboard was ingenious, featuring a number of soft-touch keys that not only acted as a standard keyboard, but were also pre-programmed to give you an entire word or command in the appropriate place, making it easier than ever to write your own programs. It came with only 1 KB of memory onboard—thankfully my dad sprung for the weighty 16 KB RAM module, which clamped onto an edge connector on the rear.

While the ZX81 was a great way to start out, it was certainly limited—the graphics were black and white only, and the sound quality was very limited.

Shortly afterwards, I stepped up to the



Sinclair Instructional TI-99/4A, which had polyphonic sound and a colour display. Even better, you could also attach joystick or insert program cartridges, just like the Atari 2600. While the Sinclair was fun to goof around on, the TI-99/4A, actually felt like real computing to me; it came as a brushed metal casing, the keyboard felt good to type on, and there was 16 KB of RAM already onboard, with room for even more expansion. I was actually so happy with the TI-99/4A that I didn't pay much attention to the Vic-20 or the Commodore 64, even at the height of their popularity. Again, I could use the TV in our basement for both the picture and the sound, and I spent hours and hours programming primitive driving games, graphics displays, and simple musical numbers. But alas, even this was

not to last.

Through my senior high days, I supplemented my at-home computer explorations with semi-regular visits to the SuperPET machines located in the school's main office. Part of this was for the fun of learning, but I have to admit that a big chunk of it was the fact that someone had figured out a way to get the SuperPETs to play a fairly faithful version of Space Invaders. When I finally headed to high school, even that became bad stuff when I discovered how fun it was to play around on a VAX system. I even started trying to hack around the school's network, only leaving when the name finally booted us out.

When the first issue of *The Computer Paper* hit the streets, I was most likely sitting in a class at Brandon University, taking my first computer science course (even an instructor who kept referring to himself as "your old buddy Geoffrey"). At that point, I was still at least a year away from buying a Commodore Amiga 500 (complete with 1 MB of RAM and no hard drive). I was even farther away from buying my first IBM-based PC, which was the first of my Windows-based computers.

I've gone through so many machines and learned so much since then, but it's all been a blur. I can only imagine what will be on my desk when *The Computer Paper* celebrates its 35th anniversary.

Happy 15th, TGP! It's been great to spend part of that time with you. ☺

Read Total Gamer Canada's premiere gaming magazine

TOTAL GAMER

www.totalgamer.ca

Total Coverage. All Platforms.

http://www.macrotronics.com

Macrotronics.com

EDMONTON · CALGARY · VANCOUVER · COLE LAKE

Introducing... **BEAT THE NEXT GUY SALE!!!**



Intel P4 Computer System Specs



Includes:

- 18" Macrotronics Case
- Intel P4 3.46Hz 531FSB CPU
- 256MB Memory
- 30GB Hard Drive
- Nvidia TNT2 32MB AGP Video Card
- 48x24x48x CORW Drive
- Windows XP Home Operating System
- 107 Windows Spill Resistant Keyboard
- Logitech PS/2 Mouse
- 17" DynaFlat CRT Monitor

**System can
be as low as
\$899***

Check our website:

www.macrotronics.com
under Local Store Specials for
upcoming **Surprise Sales!!!** Don't
forget to enter your email in our
mailing list to receive clearance
and discounted product list.



*How it works:

- 1) Sale will start Wednesday, January 29, 2003
- 2) System price will start at \$1199 and will be discounted \$50 each following days
- 3) The number of system sold will be posted on the website at 12:00PM the following day
- 4) Price reduction will stop at \$899
- 5) Total of **30** systems available

Wed	Jan 29, 2003	\$-1199
Thurs	Jan 30, 2003	\$-1149
Fri	Jan 31, 2003	\$-1099
Sat	Feb 1, 2003	\$-1099
Sun	Feb 2, 2003	\$-1099
Mon	Feb 3, 2003	\$-1049
Tue	Feb 4, 2003	\$-999
Wed	Feb 5, 2003	\$-949
Thurs	Feb 6, 2003	\$-899

**Harry
Now
systems
are
selling
fast!!!**

- 6) Order can be placed through the internet at
www.macrotronics.com/bc by phone
(804) 248-0828 or in person at #525-3771 Jacombs
Road, Richmond

Calgary: 140 Macdonald Rd. SW
Ph: (403) 248-0828
Fax: (403) 248-0384
E-mail: calgary@macrotronics.com

Edmonton: 10015 106 Street
Ph: (780) 488-8910
Fax: (780) 488-8910
E-mail: edmonton@macrotronics.com

Richmond: 5715-5715 Jacombs Road
Ph: (604) 248-0828
Fax: (604) 248-1818
E-mail: richmond@macrotronics.com

East Lake: 6633 - 51 Street
Ph: (780) 594-8828
E-mail: eastlake@macrotronics.com

*Prices are \$899 between Jan. 15, 2003 to Feb. 14, 2003 and are subject to change without notice. Canada-wide sale. Limited quantities. Taxes and shipping are property of their respective systems. Not responsible for errors and/or omissions. *Sales payment based on 36 months 0% interest. Payment & Business Lending also available. All pictures are for illustration purposes only.

Blogging guide lacks detail

I knew I was in trouble when I noticed this slim book was written by six people. *Essential Blogging* is the first book I've seen on the subject of Weblogs—or "blogs." With blogs, users essentially make the Web their own personal soapbox, spinning out on events and issues both personal and private. But while *Essential Blogging* covers the basics well, its scattered approach to the subject matter will disappoint those looking for something more in depth.

This book covers four types of blogging software: Blogger/Blogger Pro, Radio

Userland, Movable Type, and Blogger. And, however big the problem, so many programs are included that none gets the load of detailed coverage users are likely to want. I mean, would you buy a book that just looks at "word processing programs" instead of a more focused title on Word or WordPerfect? As well, the quality between chapters varies, with different levels of coverage for each program—likely a result of the number of authors.

The basic structure of the book provides an introduction to each program, followed by a chapter detailing more advanced fea-

tures. I use Blogger Pro for my blog (mitchondraco.com), and while this book provided me with a few new tricks, I don't think they were worth the price of admission. The information on the other blogging programs was interesting, but I would have preferred a more in-depth look at the program I use—a complaint I suspect some of the other programs would also inspire. Two truly useful chapters for \$40 isn't a bargain in anybody's book.

As for what for what is unfortunately a 1.0 version, though I'd wait for 2.0.

—Keith Schenck/Bobots



Picture book documents history of computing

Fast and ferment, this is a picture book—a guide through the history of computers as seen through the camera lens. The publisher, Taschen, is better known for books on the visual arts, typically on subjects like Impressionist painters, architecture, modern art, and industrial design. But, whether you are

looking for a good history of computational development or a trip down computer-memories lane, this provides a good illustrated look.

A few pages in, you realize this is not your typical book. The text accompanying the numerous pictures is laid out vertically (parallel to the spine), so it has to be

viewed sideways, like the centerfold of a magazine—something that might earn a few glances while reading a book by the fire. But Charles Wunder offers an insightful history of the development of computer systems, ranging from Charles Babbage's Victorian difference engine to the latest in Web-surfing cell phones. But

the text really serves as background to the hundreds of pictures of computer systems that are the real heart of the book.

For the historically minded, there are fascinating black-and-white pictures of named leading scientists pouring over results from early machines like the

Continued on page 93

AD INDEX

F.U.M.A. Ltd.	100	Georgio 2000	44	IT Solutions	87	Protek Computers	81
IT Computer	76	Computex Snap Meter	102	NetNet Networks	77	Yen Age Computer Ltd.	29
A. Link Computer	73	Consultal Systems	45	Networld Technologies	97	PC World Computer Ltd.	83
A. Link Computer	76	Crysal Computer Ltd.	34	Intelligent Systems Inc.	68	Phantom Technology Group	101, 102
A.L.U.M.I. Computer	86	CSP Computer	60	Intrepid Software	94	Phase 1 Systems	9
A-Power Computer Ltd.	85	Coburns Industries Inc.	87	Interact O.A.	86	planet velocity	70
ACMCA Computers	87	Cotabak Cambridge Plus Inc.	82	Kardig	68	Powerment Computers	61
Advanced Business Technology Inc.	102	Dalco	59	BLUENICA	24	Praxis Media	103
Arco Media	101	Data Recovery/Cross	83	I.A.T. Information	40	Prolog	13
Artway	99	DCC Technologies	87	Language College	92	Rack Computer	54
Avalon Computer Technology	11	Dell Canada	2	Laptop Hospital	82	SAIT	100
Adipon	52, 53	Dell Computers	60	Local Networks	79	SMS Tech Services	100
Apex Computer Inc.	100	DNA Technologies	83	Local Networks	80	Semtec Industries Ltd.	101
Apexcon	100	Digital Computers Inc.	55	Local Networks	29	SOHO Sherry	100
AT&T	88	Eltech Computers	41	CG Electronics	11	Series Computers	35
Atmosphere University	59	Bechtel	56	Core Communications	64	Telidon	103
ADDP Group Inc.	101	eSolutions.com	100	MicroSystems	98	The Maple Bookkeepers Inc.	101
Autosystems Inc.	28	Envisioning Business	100	Wincal Labour Services	104	Synch Computer Inc.	51
BC Computer Inc.	101	Executive Technology	51	WDC Software Inc.	60	TG Systems	26
Beacon Computers	100	Extronic Technology Inc.	96	Worldview Solutions	96	UPC Computer Inc.	72
Book Warehouse Ltd.	109	First Choice Bookbinding	108	Micro Concept	98	USA	59
CA's Computer Mall	109	Hy Computers	75	MicroNet Canada	6	Venus Computers	10, 79
Canadian Barcode	70	Hy Computers	75	MicroNet Canada	6	Venorex	3
Canadian Computer	47	LA Systems	100	MH Solutions	100	Vest Ink Ltd.	100
CIF Data Recovery	101	Genetic Computers	48	Mindful Inc.	100	Workbooks Computers	61
CIF Canada	84	Computer Technology	7	MSB Software Inc.	52	www.offshore.com	100
CIF Computer Outlet	101	Hall-Pear Computer Books	51	MultiMedia Technologies	38	www.rigit.com	26
Chama Soft	100	Heaton Products	5	Netlink Computers Inc.	38		
Cipher Systems	108	Hutch Classifieds	102	New Type Computers	25		
CyberTech College	95						

For Computer Buyer's Guide information, see "Where to Find Us" on page 92. For information on the book, see "Books" on page 92.

Picture book documents history

Continued from page 52

Univac, Mark I, and the Whirlwind. Enter the age of commercial computing, with the likes of IBM, DEC, and Honeywell, and you see how computers were originally marketed (one wonders how computers ever got their peely reputation with all the pictures of lovely models draped over their keyboards in the '60s).

Those who were amazed during the advent of the personal computer revolution will fondly remember the pictures of and advertisements for such classic machines as the ZX81, Apple II, and TRS-80, among others.

This book was simultaneously published in German and English. While you couldn't tell this by the quality of the translation (which is excellent), it does explain a curiously German-centric view on the development of computing history, which contains more European contributions to the field—Konrad Zuse's Z machines, the British-Soviet computers—than you find in American histories about computers.

Scattered throughout are glimpses at how computers have been seen in popular



**Computers:
An Illustrated History**
Author: Gordon Martin
Publisher: Taschen
www.taschen.com
ISBN: 3-8330-0283-5
Hardcover, 127 pages, 300g
Price: \$48

Rating: (out of 5 stars) 4.5
Top-notch illustrations
Availability: www.taschen.com
Cons: Using
provided by All Tech

culture, primarily from movies where computers played a role, like HAL in 2001, or machines that played potentially lethal games in *Doom* and *WarGames*.

This book offers a fun pictorial romp through computing history.

—Rick Schreffelt-Alberts



Get Started Now!

Sams Teach Yourself in 24 Hours will get you up and running in just 24 lessons of one hour or less.

- Step-by-step instructions walk you through the most common tasks
- Q&As, quizzes, and exercises at the end of each chapter help you test your knowledge
- Notes and tips point out shortcuts and solutions



Available at:

**BALTIMORE
COLUMBIA**
Half Price Computer Books
4337 Loughhead Hwy
Baltimore
www.halfpricecomputerbooks.ca

Half Price Computer Books
140-2941 Denham St
Vancouver
www.halfpricecomputerbooks.ca

SAMS

Practical
Technology
Library

Get Your Career On Track Today!

Fast track to a degree with our post-diploma programs and transfer credit options!



Computing and Information Systems for Professionals

You must enhance your skills to succeed at today's highly competitive job market. Athabasca University is a world leader in online and distance education offering single computing and IS courses and complete Bachelor's and Master's degree programs.

Hot Topics

User Support
Java Programming
Website Technology

Advanced Operating Systems
Systems Design and Implementation

Hot Programs

Master of Science in Information Systems

Bachelor of Science in Computing and Information Systems (BIS)

University Certificate in Computing and Information Systems

Athabasca University

Canada's Open University

<http://athabasca.ab.ca> • 1-866-731-0210

FlipAlbum creates virtual photo albums

By David Trause

You have a growing collection of digital pictures, so wouldn't it be neat if you could show them in an album, as you would your regular prints? That's the main promise behind FlipAlbum—an application that lets you place images in virtual album pages, then flip through them on your computer screen at the click of a mouse button.

The albums you create are 3D virtual representations of a photo album, with a cover, table of contents, and album pages. Clicking on the left or right "page" turns it over, or flips it (hence the name), with an animated sequence that looks like you are flipping through the pages of an actual book. The album also permits quick access to the table of contents, or specific pages. Pages can be bookmarked, and a slideshow feature lets you art back and view images while the software automatically turns the pages.

Albums can be posted to various Internet sites, including one managed by eBook Systems. A FlipBook viewer is needed, but a basic one can be downloaded for free from the FlipBook site.

With the Suite and Professional edi-



FlipAlbum 5 Professional
Full: online System, www.flipalbum.com
From US\$99.95 (Standard) US\$149.95 (Suite), US\$199.95 (Professional)

tion, a CD creation utility is also included. You need to use separate CD recording software to actually burn the CD, but the FlipBook utility enables the images, a FlipBook viewer and an autorun program, so anyone can just pop the disc you've created into the CD drive of a Windows-based computer and view the album.

Additional features of the Professional version are needed at commercial applications. You can prevent people from printing images from the CD, something that photographers might want to implement; they could send images to prospective clients on spec and still protect their images against unauthorized use. The CD can also be set to "expire" after a certain date. The Professional edition also allows commercial distribution of FlipBooks, which means the program could be used to create and distribute product cat-

alogs, for example.

FlipAlbums can be customized using "themes" that consist of coordinated covers and interior pages of various designs. Some themes are included for common events (weddings, graduation, vacations, and birthdays, for example) and you can buy more themes or save time to create your own on the FlipAlbum community site.

Building a basic album is very simple: select a suitable theme, open a folder of images, and FlipAlbum automatically creates thumbnails, table of contents, index and as many pages as necessary to show the images, with one photo per page. You can change themes at any time, and add images from other folders by selecting each folder in turn, then picking the images you want to import.

The program places small, thumbnail images on the first pages of the album, followed by the table of contents. It automatically generates an index that is placed on the last page of the album. You can change the order of the images by either dragging a thumbnail or a table of contents listing to a new position. The thumbnails, table of contents listings, index, and images themselves are linked, so a change to one updates the others—for example, reversing the order of two thumbnails causes the order of the actual images to change, as do the contents and index orders updated as well.

You can also add annotations to the page, as well as multimedia components such as video or music clips, or a voice comment. The program supports a number of still image (including GIF, TIFF, JPEG, and BMP), motion (AVI), and sound (WAV and MP3) file formats.

The program allows you some flexibility to manipulate the layout—for example, remove images and placing multiple of them on the page—in much the same way you'd lay out a page using desktop publishing software. However, we found this confuses the table of contents and index. If pictures X and Y were on separate pages, you move them to the same page, the contents page doesn't have the intelligence to adjust for this: the new page with the two images retains the name of one of the original images, while the reference to the second image stays with the original, now-blank page.

The program uses the existing name of the image files to create the album, so if you want meaningful labels like "Frank and Jean" rather than "SC00014", it's best to rename the image files before importing them into FlipAlbum. Also, while the program will reuse the images to fit into the pages, it doesn't actually alter the file size. If you populate your album with a lot of high-resolution images, the FlipAlbum will become unnecessarily bloated. We found that reducing images to 540x480 kept the album small, while providing more than enough quality for screen viewing.

FlipAlbum includes a competent image editor that allows you to correct minor image defects like red-eyes, alter brightness and contrast, and add effects.

Overall, FlipAlbum makes very attractive virtual albums. The program is easy for anyone to use, but also adds some advanced features and allows customizations that make it a good tool for commercial applications, too. This one will definitely stay on my hard drive for while. **D**

WWW.

TCF—for some examples of elegant Web page using Flash, click on the online home of the Cooper-Hewitt National Design Museum from the homepage, click on exhibitions, where you'll find links to current and past shows—each of which launches a Flash "brochure" complete with sound and interactive elements.

www.nhm.si.edu/

Where Will You Be In 2003?

Faculty of Business

- Michael Office Assistant
- Legal Administrative Assistant
- Business Management
- Accounting & Payroll Administrator
- Computerized Office Administrator

For Program or Student Loan & Grant Information

Faculty of Technology

- Programmer Analyst/Jr. Analyst
- Solutions Developer
- Network & Internet Support Specialist
- Web Designer
- A+ Asset Manager

-Available Evenings & Weekends

Call Today 604-585-8585

216-9601 King George Hwy

PCI A+ Certification

A Certified Graduate Program

PROMETRIC
CERTIFICATION CENTER

PCI A+ CERTIFICATION

PCI A+ CERTIFICATION

Register before Feb. 16, 2003 and get 2 FREE EXAMS towards these Certifications

MCSE, MCSA, MCP
Linux, A+, Network
CCNA, NIOS

Must attend before March 3, 2003
Non-Refundable \$25 Fee

CDI COLLEGE
OF BUSINESS & TECHNOLOGY

www.cdicollege.com

The big and small of portable computing



Just when you thought that the personal computer market had run out of ideas, there are machines from that it's about to reinvent itself in the secret labs of Silicon Valley. First let's give the reader dude prizes the perk slip, run the cow hide on the boxes, and merge the computers that market the last letter of the company name. The new PC is not just new because some Silicon marketer says it's new—it's new because it is changing shape.

And these new processing machines are not your father's old. Ballroom ball rooms are not going to see the day, what's going to win the computer wars for the newly shaped computers is more different than thinking different.

First, all the desktop is all but dead and that's because we want to take our computers with us wherever we go and a huge loss is not going to fit in pocket. However, there are two companies working away in the secret labs of Silicon Valley to achieve a pocket-sized computer. Now, I am not talking Palm and PDA PC here. That's yesterday's news. Tomorrow's computer is about the size of a really romance novel.

I wandered over to San Mateo the other week to get a glimpse at this backlit future and there, in the shadow of Oracle's campus, was this little office in a long-shed complex with rare computers floating around in it.

The company is called Tugu (pronounced) and its pride and joy is the eight-inch, a 570 x 124 cm, computer that runs a full version of Windows XP. The pocket computer—which looks like a IBM BlackBerry on steroids—has a 180-MHz National Semiconductor Geode processor. It sports 256 MB of non-expandable memory, a 10-Gb or 20-Gb hard drive. It runs on a lithium-ion battery, that stores about four hours of power. It got gassy guts and (optional) memory appeal. The bookish computer comes in multiple colors like steel blue and burgundy.

What's cool about this new gadget is

that it's a desktop computer replacement. It is highly portable and can be used autonomously away from the remnants of a desktop, thanks to an integrated thumb-driven keyboard and mouse stick. Plus it has an integrated 4-inch, 16-bit LCD touch-screen capable of displaying more than 262,000 colors.

The device is named after the atomic weight of boron, the densest non-radioactive element. In the spirit of arm product monies like Unix, it was designed and named for a bunch of Stanford University engineers. The machine's most desktop-like quality is that it runs a full version of Windows XP, you'll a quarter of the size of an average laptop. To connect it to the world outside your pocket or purse, it has integrated PC Card and SD card slots and one USB port. The company wanted connection agnosticism, so eschewed integrated Bluetooth and Wi-Fi. The designers agree that the customer should make that decision and choose the connection technology that fits them.

Light, which stands for Tugu's Quantum Technology, figures salespeople, field workers, and ultra-mobile devices will be hot for the device. So that it can be used in the wall pen cubicles of North America, the device can switch in a monitor and keyboard, turning it into a full-fledged desktop computer. There's no optional CD burner or floppy drive, but you could use an external one with you and connect it through the USB port.

I think it could revolutionize what we think of as a portable computer. It will be available next year, likely branded by a yet-to-be-named mainstream computer company, at a price of around \$15,000 to \$18,500.

Of course, corporate institutions are not all about small. Expect to see a new category of machines, computer called the desktop replacement. Like an aging supermodel, expect it to be heavier and more sophisticated. The weight of the perk up is going to balloon to between 3.8 and 4.5 kg (8.5 and 10 lb) and screens will be super sized to 26-inch to 21-inch.

Features on these beasts will vary day



Tablet, light cover, flexible image



Desktop system is not bad

tap them into personal entertainment devices. They'll have CD or DVD drives, an MP3 player, and FM radio and TV.

namers, along with high-quality speakers. Manufacturers will remove the key-boards and offer onboard mice, though perhaps these command-and-control devices will clip on when they need to travel.

The poorly portables will also be shock full of new-fangled connectors like USB 2.0 ports (40 times faster than traditional USB ports) and IEEE-1394 ports. The latter also called FireWire by Apple and think by Sony is now the standard way to transfer video between digital camcorders and computers.

The seemingly backward trend toward robust huggies will likely appeal to students and those who don't travel much with their gear, but not the option, without the need for heavy machinery. "These power will be equal to what you can do on your desktop today," explained Canadian Danny Lee-Yue, one of four directors responsible for worldwide research and development at Toshiba.

They will also mean about the same as a desktop computer. The new machines will start to arrive in 2003 and become mainstream by 2005 or 2006—or so hopes the laptop industry.

One of the first to make good on this promise is the Netat Technology (www.netat.com) Flip-Pad Venger. This US\$450 mobile computer is an address tag full of baggage at 5.4 kg (12 lb), including batteries and two fixed drive bays, the computer is going to

Continued on page 88

BEST CISCO LAB IN TOWN!

VENUE CERTIFICATION COURSES

- Cisco CCNA/CCNP/CCDP/CCSP
- Microsoft MCSE/MCNA/CCNP
- Novell Solaris/SCSA/Novell SCP
- Oracle DBA/Developer

New Special price for Oracle W & CCNA available!



ADVANCED CAREERS ORIENTED

- Cisco Networking Specialist (IT)
- Network and Security Specialist
- System Solution Development Specialist
- Consultant and Accounting Specialist

CISCO LAB EXPERTS AVAILABLE (On-site or On-call)

WE SERVE! WE WANT YOU TO JOIN! MAIL YOUR RESUME OR INQUIRY TO OUR OFFICE

City Tech College www.ccll.com

1550 E. Houston Street Suite 1000, INC. VISNAP
www.citytechcollege.com info@citytechcollege.com

160-299-8950

What's cool about this new gadget is

EXTRANC Computer College

Try Our Newly Integrated

Online Registration



and
get up to

25% OFF!!

www.extranc.com/online

WHY EXTRANC?

- ✓ The best Microsoft training partner - MS CTEC
- ✓ Updated - Certified & Experienced Instructors
- ✓ Certification Guarantee on ALL Courses
- ✓ On the job practicum available for qualified applicants
- ✓ Both Full Time & Part Time schedules available
- ✓ Real industry projects
- ✓ Large FREE parking space



HOT Programs

Object Oriented Software Architect Program With IBM and Sun/Java
• Software Architects are the hottest position in IT market >
• Microsoft Certified Application Developer
(MCAD on .NET)

www.extranc.com

CompTIA package (A+ + Network+ + Server+)

Full Time ~~\$3,999~~

Now **\$1995** (2 weeks)

registration deadline Jan. 24

Microsoft Supercombo: MCP/XP/ MCSA/ MCDBA/ MCSE

Full Time ~~\$40,200~~

Now **\$7500** (7 weeks)

registration deadline Jan. 20

includes 7 "Microsoft Original Curriculum" (MOC), Study materials, Software and a 10% off exam voucher

Special technical workshops:

Including Microsoft 2000, XP and
Net framework, database giant -
Oracle's latest technologies in
2002 and enterprise-level
system security vulnerabilities.

Our Ongoing Program:

- MCP/XP
- MCSE
- MCDBA
- MCSA
- Oracle 9i DBA
- Oracle 9i Internet App. Developer
- Java 2 Programming
- Unix
- C/C++

Microsoft exams on sale NOW!

Our fully integrated IT programs will shape you into any
hot and in-demand commodity in the job market.



#100-8132 Granville Ave. Richmond 604-821-1114 info@extranc.com

Choose Langara!

Your ^{Affordable} One-Stop
Computer Education Centre

Earn an Associate Degree,
Diploma or Certificate

Choose a Career in:

• Computer Information Systems **

A Comprehensive 2-year, business-oriented CIS program
Register early - Terms begin in May, September & January
www.langara.bc.ca/cis/
Call Fred @ 604.323.5833

** get as much as
you can while you learn!
Co-op Option!

• Computer Science

Applied Computer Science & Technology **
Internet/Web Computing & Software Development **
Professional Computer Science & Technology
www.langara.bc.ca/computer-science/
Call Ardeshir @ 604.323.5801

• Electronic Media Design

Full-time, 1-year web & interactive CD design program
www.langara.bc.ca/cd/
Call Greg @ 604.646.7991

Fast Track your Career in:

• E-Business/E-Commerce

Become an E-Specialist in only 4 months, part-time

• Oracle Database Development

Become a DB Developer
and prepare for Oracle's Certification exams part-time

• Web Publishing/Development

Become a Webpage/Website Developer in 4-8 months, part-time
www.langara.bc.ca/cs/
Call Jennifer @ 604.323.5266

Upgrade your software skills:

- 13-week Computer Skills Certificate
- 1-day classes in Microsoft Office 2000
- evening or weekend courses available
www.langara.bc.ca/cs/
Call Maureen @ 604.323.5892

Register NOW for 2003!



LANGARA
COLLEGE

TRAINING LISTINGS

COMMENTARY

Cyberwalker

Concepted from page 55.

lighten all the flip-palm book art, but almost surely they will want big art to go.

The Voyager, currently powered by a 1.6-GHz AMD chip, has the same footprint as your average laptop but is perhaps three times as thick. Like high-tech ergonics, it unfolds into a double-sized laptop with acres of keyboard and a touchpad. Here's the kicker: though, this baby has two LCD screens that flip up side by side to produce 21 inches of screen real estate. Seneca has integrated

console to pre-installed copies of Microsoft Office and Windows XP (or 2000) for seamless and snappy position of windows between monitors.

One of the screen's also on a gimbal so it can both flip up and down as well as rotate by 240 degrees so two people sitting on opposite sides of a table can view screen content. A future model may contain dual processors and have the ability for two people to work on the system at the same time.

Eventually, the Flip Pad Voyager will work with an optional outboard keyboard, and perhaps dual processors. Then there's a way for electronic signatures and eventually—in future versions—a touch-screen function in fold-out mode, which, of course, will give it Tablet PC functionality.

In mobile computers, as it turns out, size does matter. And Mike Wuker surely moved from Toronto to California. He can be reached at mike@cyberwalker.com.

WWW.

TOP—The site for the ubiquitous team of words offers users a chance to play with several of the late April by dragging and dropping words on the screen. Visitors can also read poems from other members, post or submit a poem for publication on the online anthology.

www.mightyword.com

Barnaby College
101-1159 W. Windsor, Vancouver, B.C.
Tel: (604) 684-9511
459 4th Floor Metrolink, Barnaby, B.C.
Tel: (604) 421-5711
Email: info@barnabycollege.bc.ca
Website: www.barnabycollege.bc.ca

Desktop Publishing, Computer Graphics & Internet Publishing Program
Internet Professional Program

Clay Tech College
3550 E. Hastings St.
Tel: (604) 259-8950
Email: cltc@claytech.com
Website: www.citytechcollege.com

• CCNA, CCNA-CCIE, CCSE, MCSE, MCSDA, MCSD, SUN
Explores in:

- Information Systems & Network and Security
- Systems Integration & Systems
- Software Development
- Computerized Accounting & e-Business

CDI College of Business & Technology
235-3801 King George Hwy
Surrey, B.C. V3T 5H5
604-585-8585
604-585-9505 fax
www.cdicollege.com

Who are we?

CDI College is the largest private training institution in Canada, with over 1200 employees and 80,000 students in 71 locations. Daytime and evening courses are available. We also offer certification Boot Camps.

CDI prepares students for the work force, specializing in diploma programs in the following facilities:

- Network & Internet Support
- Computer Programming & Analysis
- Office Systems Technology including Medical, Legal and Accounting/Payroll.

For program or course brochure information, please call 604-585-8585.

Extarac Technologies Inc.
P100-0120 Glenview Ave.
Richmond, B.C. V6V 3P1
Tel: (604) 821-1184 Fax: (604) 821-1141

Email: academics@extarac.com
Website: www.extarac.com

We are:

- Oracle Authorized (WOP)
- Microsoft Authorized (AATP)
- We provide:
- Certification Guaranteed
- Training Program
- One to one TA, Tutoring
- Course Projects Integrated
- Full Time/Part Time Available
- We offer:
- Oracle
- Oracle® Database Administrator

• Oracle Internet Application Developer Rel 6

- MCSE Windows 2000
- MCSE Windows 2000
- MCSDA Windows 2000
- MCSDA Windows 2000
- Sun Java 2 Programmer Program

Lansape College Continuing Studies
100 West 45th Ave
Vancouver, B.C. V5T 2Z6
Tel: (604) 323-5521 Fax: (604) 323-5899

Web: www.lansape.bc.ca/cis
Email: prof@lansape.bc.ca

Computer Technology Certificate Programs:

- Computer Developer
- Computer Information Systems (I or Full Time)
- Computer Skills in the Workplace
- Commerce
- Oracle Database Developer
- Web Publisher
- Web Developer

- Business Certificate Programs
- General Business Management
- E Business Management
- Small Business Management
- Entrepreneurial Success
- Professional Sales
- Supervisory Skills

Creative Arts Certificate Programs:

- Advertising & Graphic Design
- Electronic Media Design (1 yr full time)
- Independent Filmmaker's Production
- Photography

Most Certificate Programs can be completed in one to three semesters on a part-time basis (evening or weekend) basis. Classes start every two to four months.

Open Learning Agency
Barnaby Skills Centre
115 - 6400 Dominion St., Barnaby, B.C.
Tel: (604) 690-8450
Email: info@ola-bc.com
Website: www.ola-bc.ca

Open Learning Agency (OLA) is a public post-secondary institution that offers an site

and distance education, information technology programs are taught at the OLA Skills Centre. Full-time and part-time courses are offered during the day and evenings:

- Technical Support Specialist
- Oracle® DBA - Database Administrator
- CCNA - Cisco Certified Administrator
- CompTIA - A+ Certification Program
- CompTIA - Network+ Certification Program
- MOUS - Microsoft Office User Specialist

Funding may be available to qualified candidates.

IOridge Tech.LTD

Tel: (604) 597-0071
Fax: (604) 597-0072
11111 111th St. Unit 100, Richmond, B.C. V6V 1A9
11111 111th St. Unit 100, Richmond, B.C. V6V 1A9

USB2.0 Enclosure

- 5.25" CDROM/DVD Enclosure \$119
- 3.5" HDD (Desktop) Enclosure \$129
- 2.5" HDD (Pocket Size) Enclosure \$98

Firewire Enclosure

- 5.25" CDROM/DVD Enclosure \$129
- 3.5" HDD (Desktop) Enclosure \$129
- 2.5" HDD (Pocket Size) Enclosure \$108

Firewire + USB 2.0 Combo Enclosure

- 5.25" CDROM/DVD Combo Enclosure \$189
- 3.5" HDD (Desktop) Combo Enclosure \$189
- 2.5" HDD (Pocket Size) Combo Enclosure \$189

FireWire / USB 2.0 Products

\$79.00  5.25" FireWire/USB 2.0 1x FireWire 400 Port 1x USB 2.0 Port 1x FireWire 400 Port 1x USB 2.0 Port	\$29.00  Mini-USB CD-ROM CD Reader	\$59.00 - \$69.00  5.25" FireWire/USB 2.0 1x FireWire 400 Port 1x USB 2.0 Port 1x FireWire 400 Port 1x USB 2.0 Port
\$89.00  5.25" FireWire/USB 2.0 1x FireWire 400 Port 1x USB 2.0 Port 1x FireWire 400 Port 1x USB 2.0 Port	\$29.00 - \$39.00  Mini-USB CD-ROM CD Reader	\$59.00  5.25" FireWire/USB 2.0 1x FireWire 400 Port 1x USB 2.0 Port 1x FireWire 400 Port 1x USB 2.0 Port

DAIWA DISTRIBUTION INC.

Unit 11-13, 13520 Crestwood Pl.
Richmond B.C. V6V 2G3
Tel: (604) 244-8912
Fax: (604) 244-9986
Tech: (604) 244-8195
Website: www.daiwa.net
email:daiwa.bc@ daiwa.net

Announcing...
The BEST Desktop
Replacement from



Dealers
Welcome

1-877-BC-DAIWA

U-Buddie PC

- A practical and affordable choice for primary PC
- Easy-to-use for any skill level
- Innovative, highly integrated design
- Light and compact, yet powerful
- 252mm x 75mm x 244 mm (with stand)

i-Buddie PC

i-Buddie

- Intel Celeron 2.0 CPU
- 256MB SDRAM
- 10GB hard disk drive
- 34" TFT display
- 8X DVD-ROM
- 56K modem
- 10/100 network adapter
- 16M port

i-Buddie 4

- Intel Pentium 4 CPU (Bioshield)
- Up to 1GB DDR SDRAM
- 15.1" TFT display
- 15.1" TFT display
- DVD/CD-RW combo drive
- 56K modem
- 10/100 network adapter
- USB 2.0 (4 ports)
- IEEE1394 Firewire port
- 16M port

i-Buddie XP

- AMD Duron/Athlon XP CPU
- Up to 512MB DDR SDRAM
- 10GB 80GB hard disk drive
- 34" TFT display
- DVD/CD-RW combo drive
- 56K modem
- 10/100 network adapter
- USB 2.0 (4 ports)
- IEEE1394 Firewire port
- 16M port

Green 550

- Intel P4 mobile processor up to 2 GHz
- Up to 512MB DDR SDRAM
- 15" TFT LCD hard disk drive
- DVD/CD-RW combo drive
- 56K modem
- 10/100 network adapter
- USB 2.0 (4 ports)
- IEEE1394 Firewire port
- Wireless 802.11b
- Li-ion battery

- Desktop Computer**
Pentium 4
800-833-4343
- Mini PC**
Pentium 4
800-833-4343
- Memory Converters & Wireless**
Pentium 4
1-888-333-4343
- Special Computers Inc.**
Pentium 4
800-833-4343
- Mini Computer**
Pentium 4
800-833-4343
- 4 Core Computer**
Pentium 4
800-833-4343
- Mini Vision**
Pentium 4
800-833-4343
- Mini Laptop**
Pentium 4
800-833-4343
- Mini Computer Series**
Pentium 4
800-833-4343
- Desktop Computer Inc.**
Pentium 4
800-833-4343
- Mini Computer System**
Pentium 4
800-833-4343

The Best Desktop Replacement Solution

- 15" TFT XGA
- Intel Pentium 4 (Bioshield) CPU
- 1GB SDRAM support
- Loading 16K hard drive
- DVD/CD-RW Combo
- 56K modem
- 10/100 Ethernet
- IEEE 1394 Firewire
- USB 2.0 ports

ECS ELITEGROUP

www.ecusa.com www.desktops.net

Authorized Distributor

Cipher Solutions

Networking & Systems Specialists

Networks (LANs) Configuration, Planning & Design
Networks (LANs) Implementation & Administration
Networks (LANs) & Security related Training
Networks (LANs) Support and Maintenance
Setup & Configuring VPN & RAS access
Internet Connectivity, Security Management & Sitekit

**Microsoft
CERTIFIED**
Systems Engineer

Tel: (604) 278-2799
Fax: (604) 278-4922
info@cipher-solutions.net

47-1408 140th Ave.
North Vancouver, BC
V7P 3N6

www.ciphersolutions.net

Cyotek CARTRIDGE PLUS EXPRESS REFILL

WEIGHT & LARGE CARTRIDGE DEPOSIT

- Ink Refill from \$2.95
- Lower Cartridge from \$15.00
- Refill 80 from \$9.99
- New Cartridge from \$2.99
- New OEM 127, Ink-Born only other prices
- OEM Printer Headlines
- We refilled empty cartridges
- 100% Warranty
- Professional Job
- Free Delivery for 55km
- Satisfaction guaranteed

Order Now: 604-270-8625

See 604-270-8663

Email: cyotek@cyotek.com

Web: www.expressrefill.com

STORE LOCATIONS

BURNABY (MAIN OFFICE)

100-1222 Burnaby Hwy. #100 Burnaby BC
Tel: (604) 270-8625

SEASIDE (NEW BRANCH)

100-1222 Burnaby Hwy. #100 Burnaby BC
Tel: (604) 270-8625

WILLOWDALE (NEW BRANCH)

100-1222 Burnaby Hwy. #100 Burnaby BC
Tel: (604) 270-8625

WILLOWDALE (NEW BRANCH)

100-1222 Burnaby Hwy. #100 Burnaby BC
Tel: (604) 270-8625

WILLOWDALE (NEW BRANCH)

100-1222 Burnaby Hwy. #100 Burnaby BC
Tel: (604) 270-8625

Big Computer Swap Meet

Saturday February 8th 11:00am - 4:00pm

Creston Cultural Centre - 3250 Commercial Drive, Van. BC

Bumpkins, Deals, Fun, Friendly, Great Prices, Expert Advice, Door Prizes

ADMISSION:

Adults \$3.00

DEALER INFO:

50+ R.C. tables \$40.00 each

Don't Miss Out! One Day Only!

For Table Reservations and More Info:

Phone: (604) 251-6706

Email: bigswapmeet@bigswapmeet.com

CLASSIFIEDS

SERVICES

DO YOU WANT THE BEST?

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

100% money back guarantee

DETAILS FOR PLACING A CLASSIFIED AD

Please email or call: 1-800-363-3636 or call: 1-800-363-3636 and ask for Larry Bell. Non deadline is January 20th to the March issue. Deadline date is February 28th.

Real Total Gamer

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

Canada's premier gaming magazine

www.totalgamer.ca

Total Gaming, All in One

Authorized Warranty Service Center

Monitor Repair

acer benq asus open

sony sony adi jvc

All Brands Welcomed

We repair CRT & LCD Monitor, Scanner

Cybertec Industries Inc
#108 - 3840 Jacobs Road
Richmond, BC V6V 1Y6

Tel: 604-233-1000
Fax: 604-233-1001
www.cybertec.bc.ca

Hi Tech "NEW RATES IN EFFECT" CLASSIFIEDS

Advertise your used computer & technology equipment to over 600,000+ computer users

Low Cost

\$29.95/mo

60k Views of ads GTW or 250000 views

SEM DISPLAY CLASSIFIED ADS

\$17.95 per 1000 per column inch (1000 x 1")

DEADLINES FOR COMING ISSUES

1600pm 500k Before Ad Deadline Destruction

March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Category March 2002 March 2002 March 2002 March 2002

Tel: (204) 949-5474 Toll Free: 1-866-615-6607

Email: larry_kiska@top.ca

The Computer Paper advertising rates available at:

www.canadacomputers.com

Each letter, space and punctuation is counted as 6 characters



205 AWARDS

World Wide No.1 NVIDIA-Certified Graphics Card Supplier



41 AWARDS

Introducing in April, 2002

356 AWARDS

World Wide Top Ten Motherboard Manufacturers

IN 2002, MSI PRODUCTS WON OVER 620 HONORS IN REVIEWS AND RECOMMENDATIONS IN THE COMPUTER MEDIA THROUGHOUT THE WORLD.

Who Would You Buy?



MSI
www.msi.com.tw

Link to the Future



www.daiwa.net
Head office: 06-53-02-0000
Main office: 06-53-02-0000
Headquarter: 06-53-02-0000

MSI Authorized Distributor in Canada:



www.eprom.com
Main office: 905-661-1100
Toronto: 905-661-1100
Montreal: 514-335-7496

Samtack

www.samtack.com
Toronto: 905-661-1100
Montreal: 514-335-7496

Supercom

www.supercom.ca
Toronto: 905-661-1100
Montreal: 514-335-7496

